MINERALOGICAL ABSTRACTS

(Vol. 7, No. 9, March, 1940.)

Notices of Books.

USH (G. A.). *Strategic mineral supplies.* New York and London (McGraw-Hill), 1939, xvii+485 pp., 40 figs. Price $5.00 or 33*s*.

s editor since 1914 of the annual volumes of 'The Mineral Industry' author is especially fitted to deal with the important questions of eral production and supplies; and since 1925 he has also been on the ff Specialist Reserve of the United States Army. The book collects ether, with revision up to date, a series of articles that appeared ing a period of four and a half years in 'The Military Engineer'. ategic' minerals are those of which a country has not a self-sufficiency ordinary commercial purposes and especially so in time of war. In United States such minerals are ores of Mn, Ni, Cr, W, Sn, Al, Sb, Pt, and mica, iodine, and nitrogen. Separate chapters are devoted to h of these, in each case under the headings: requirements, uses, sub-utes,ores, ore reserves, world output and supply, United States output supply, utilization, prices, tariff, political and commercial control, eral review of domestic situation, and conclusion. Numerous tables statistics, together with graphs, are given for the years 1913–37. The f-sufficiency' (i.e. ratio of home production to consumption) of the ited States for tin amounts to only 0·1, for Ni 1, Cr 4, Pt 6, Mn 8%. short concluding chapter deals with supplies of 25 minerals and ducts in six other countries (Great Britain, France, Russia, Germany, ly, and Japan) as compared with the United States. No one country ws anywhere near an all-round self-sufficiency; Russia (including, no ubt, Siberia) heads the list, and Great Britain (excluding dependen-s) comes last. The British Empire shows a deficiency in Hg, Sb, K, S, petroleum. Analysis of statistics of exports and imports show that tain 'have-not' countries have been accumulating stocks of strategic nerals, especially manganese for steel manufacture, during the past years. Conditions prevailing during the war of 1914–18 are often erred to, and the book comes at a very opportune time in the present sis.

L. J. S.

ILEY (E. B.) & WEIR (J.). *Introduction to geology.* London (Macmillan & Co.), 1939, xii+498 pp., 325 figs. Price 18*s*.

This book is based on the first-year course in geology given by the thors in the University of Glasgow. The main part on general geo-

logy is by Prof. E. B. Bailey, and Part VI (pp. 247–378) on palaeo
logy by Dr. J. Weir. The scope is wide: a glance at the index sh
that the talk is of many things. Part II, on rocks, minerals, and st
tures, includes some account of the crystal systems; while Part II
devoted entirely to crystallography, with a separate chapter on
forms of the cubic system developed in a novel manner. Part IV d
with the microscopic examination of rocks and minerals; here 'X-er
Z-er axes' seem to be something new for optical extinction directi
Parts V and VII are on physical and historical geology respectiv
The good series of illustrations is by Dr. W. J. McCallien, but
sketches from photographs are not really so effective as would be di
reproductions. The subject-matter is clearly and crisply expresse
short sentences, and the frequent use of personal pronouns sugges
close contact with the students. L. J. S

Miller (William J.). *Elements of geology, with reference to North Amer*
2nd edition, London (Chapman & Hall), 1939, x+524 pp., 367
Price 21*s*. [and New York (D. Van Nostrand Co.). Price $3.50

This textbook, the first edition of which appeared in 1931, is
abridgement of the same author's 'Introduction to physical geolo
and 'Introduction to historical geology', both of which have pas
through several editions, and it is divided into two parts correspond
to these titles. The author is professor of geology in the University
California at Los Angeles, and the book presents the matter of his c
semester course in general geology. The preface is followed by a r
of the publishers 'To the student who uses this textbook', suggest
that the book has not merely served its purpose when the college cou
is completed, but that it may usefully be kept for future reference i
subject that is bound to crop up again. The present edition has b
thoroughly revised in the text and the many excellent illustrations,
it appears in a larger and more attractive format. It gives a clear
useful general account of the subject. L. J. S

Worcester (Philip G.). *A textbook of geomorphology*. London (Chapm
& Hall), 1939, viii+565 pp., 1 pl., 375 text-figs. Price 22*s*.
[and New York (D. Van Nostrand Co.). Price $4.50.]

From a choice of definitions of geomorphology and physiography
author prefers 'geomorphology is the interpretative description of
relief features of the earth'. The ground covered is very much the sa
as that usually given in textbooks on physical geology, but with a be

towards physiography and geography. It represents the eleven ks' course given by the author in the University of Colorado at lder, where he is professor of geology. From the large number of lable textbooks on geology it seems to be imperative that every essor must write a book. The many photographs of scenery and k diagrams of structure are excellent, but the former are not always heir appropriate place in the text. Chapters on the solar system, erals, and rocks are rather out of place and too sketchy to be of h value; otherwise the book contains much that is of general interest.

L. J. S.

LL (John). *Contributions to the geography of Egypt.* Cairo (Survey and Mines Dept.), 1939, xv+308 pp., 9 pls., 42 text-figs. Price P.T. 50 or 10*s.* 6*d.*

his includes an outline of the geological history of Egypt. Numerous mical analyses of the soluble and suspended matter in the Nile er, of alluvial mud and soils, and of the water from the large saline in the Faiyûm are collected together and discussed. Matter carried he Nile past Cairo amounts per annum to 10·7 million tons in solu- and 57 million tons in suspension. The fine sand, silt, and clay ied in suspension contains kaolin 24·5, felspars 20, quartz 18, horn- de 12, biotite 6, sphene 1·5%, &c. This suspended matter contains rtain proportion of exchangeable bases, which are also present in soils.

L. J. S.

New Minerals.

WNY (Viktor). *Az 1936 és 1937 években leírt új ásványfajok és ásvány-varietások.* [New mineral species and mineral varieties described in the years 1936 and 1937.] Magyar Chemiai Folyóirat, Budapest, 1939, vol. 145, pp. 115–123.

he chemical composition, locality, and reference to the literature given for each new mineral described in 1936–37. Supplements are ed to the previous lists for 1930–31, 1932–33, and 1934–35 [M.A. 49, 486; **6**–436].

V. Z.

IRMAN (Gunnar). *Über Phosphate aus dem Pegmatit von Lemnäs (Kimito, S.-W. Finnland).* Acta Acad. Aboensis, Math. et Physica, 1939, vol. 12, no. 6, 24 pp., 12 figs.

large pegmatite vein in hornblende-gabbro shows four stages of eralization: (1) microcline, quartz, biotite, tourmaline, beryl, trip-

lite, manganapatite; (2) cleavelandite (columbite, cassiterite, spo mene); (3) cookeite, quartz, pyrite, apatite, bertrandite; (4) kao Triplite occurs as large (9 kg.) masses; α 1·677, β 1·685, γ 1·695, 2V $\alpha : c = 44°$; analysis I, $R_3(PO_4)_2.R(F,OH)_2$. Approximate meas ments of large rough crystals showed the new forms *a c m h e w v* [Dana's letters for wagnerite] and ϵ ($\bar{1}21$), with angles close to thos wagnerite [M.A. **3**–309], and cleavages (001), (010), and ($\bar{3}01$). *Lemnä* a new mineral, is found as compact black masses, H. 5½, consistin felted fibres; n 1·73, birefringence about 0·025, $\gamma' : c = 0-44°$, prob monoclinic. Analysis II, calculating R‴ as R″, gives $3R_3(PO_4)_2.2Na$ near to varulite [M.A. **6**–486] and dickinsonite, but differing from t in physical properties. Apatite is of several kinds: (1) black mang patite, ω 1·6440, ϵ 1·6375, anal. III; (2) brown apatite as large com masses with plumose or reticulated structure and enclosing Fe and oxides and pyrrhotine, and as an alteration border around tripl sp. gr. 3·189, optically biaxial, α 1·627, γ 1·633, MnO 1·80%; (3) blu green crystals in cavities in cleavelandite; $a : c = 1 : 0·735$, 17 crys forms, ω 1·6291, ϵ 1·6332, anal. IV. Cookeite as crusts and radial ag gates of hexagonal scales. Bertrandite shows the forms *c a b* ϵ η [Da letters] and new *r* (014); α 1·590, β 1·604.

	P_2O_5.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na_2O.	K_2O.	H_2O+.	H_2O-.	F.
I.	33·09	nil	21·90	37·35	nil	2·65	0·22	trace	0·38	0·07	7·83
II.	40·94	12·76	1·92	27·87	0·53	4·59	8·84	0·42	1·48	0·13	nil
III.	41·61	nil	0·87	4·74	trace	50·23	trace	—	0·22	0·04	3·68
IV.	41·87	0·10	0·07	0·28	nil	55·16	0·09	trace	0·07	0·04	3·63

II, also Al_2O_3 1·08, Li_2O 0·02. III and IV, also Cl trace.

L. J.

[Vertushkov (G. N.)] Вертушков (Г. Н.). Кировит и купрокиро —новые минералы из колчеданных пожаров Урала.—Vertush (G. N.). *Kirovite and cuprokirovite—new minerals from the p conflagrations of the Urals.* Изв. Акад. Наук СССР, Сер. Г (Bull. Acad. Sci. URSS, Sér. Géol.), 1939, pp. 109–115, 2 (Russian with English summary.)

Fires due to the oxidation of pyrite in underground workings of Kalata mine, Kirovgrad, have enriched the mine waters in sulpha and under favourable conditions these have crystallized out on walls and mine timbers as kirovite and cuprokirovite, together botryogen, ferropickeringite (a new variety containing up to halotrichite), and ferroepsomite (containing up to 30% tauris

orhombic $FeSO_4.7H_2O$). Kirovite is abundant as large yellowish-
n stalactites and stalagmites. Crystals are monoclinic with a pseudo-
hedral habit; $a : b : c = 1{\cdot}1746 : 1 : 1{\cdot}5323$, $\beta = 75° 38'$. Cleavage
) perfect, (001) less perfect. Optic axial plane (010), $\gamma : c = 12°$,
467, γ 1·476, 2V large, positive. Sp. gr. 1·76, H. $2\frac{1}{2}$, analysis I agrees
n (Fe,Mg) $SO_4.7H_2O$. Cuprokirovite occurs as pale blue efflorescences.
monoclinic crystals have a prismatic or pseudo-rhombohedral
) habit. Sp. gr. 1·81, α 1·469, γ 1·478; anal. II, $(Fe,Mg,Cu)SO_4.7H_2O$.

SO_3.	FeO.	MgO.	CaO.	ZnO.	CuO.	MnO.	Al_2O_3.	Fe_2O_3.	H_2O.	Total.
30·51	12·75	7·45	trace	0·50	0·30	0·18	1·42	trace	46·68	99·79
30·11	18·48	3·36	trace	0·38	3·18	0·05	0·29	0·22	44·50	100·57

L. J. S.

EMOV (N. E.) Ефремов (H. E.). *On the classification of some magnesial silicates and their alumo-analogues.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 24, pp. 287–289.

he following classification is suggested for the parallel series of dromagniolites' and 'hydrosylites'. Some clayey minerals (e.g. modeveillites' [the second part of this name evidently being in-ded for deweylite]) may be intermediate members of the two series.

$^{*}_{3}.3{\cdot}66SiO_2.5{\cdot}5H_2O$	(α-montmorillonite)	$3MgO.3{\cdot}66SiO_2.5{\cdot}5H_2O$	(α-sepiolite)
$^{*}_{3}.4SiO_2.6H_2O$	(β- ,,)	$3MgO.4SiO_2.6H_2O$	(β- ,,)
$^{*}_{3}.4{\cdot}5SiO_2.6H_2O$	(γ- ,,)	$3MgO.4{\cdot}5SiO_2.6H_2O$	(γ- ,,)
$^{*}_{3}.5SiO_2.6H_2O$	(δ- ,,)	$3MgO.5SiO_2.6H_2O$	(δ- ,,)
$^{*}_{3}.6SiO_2.nH_2O$	(ε- ,,)	$3MgO.6SiO_2.nH_2O$	(ε- ,,)

creamy white, soft (H. 1) mineral occurring in the contact-zone of acid dike intruded into serpentinite in northern Caucasus, where it ears to be an alteration product of pale blue amphibole, is compact consists of interlaced fibres with positive elongation and α' 1·510, ·520. It shows endothermal effects at 150°, 350°, and 730°, and lysis by M. A. Gribova, SiO_2 48·65, Al_2O_3 0·44, Fe_2O_3 0·18, FeO e, NiO trace, MgO 24·35, CaO 3·44, H_2O+ 13·18, H_2O- 9·52, 0·35 = 100·11, gives a formula $2{\cdot}5MgO.3SiO_2.4{\cdot}5H_2O$, with ratios e to 'α-sepiolite'. [M.A. **6**–490; **7**–170, 221, 370.] L. J. S.

LEENHEER (L.). *Sur quelques minerais de manganèse du Katanga.* Ann. Service Mines, Katanga, 1938, vol. 8 (for 1937), pp. 32–64, 1 pl., 11 text-figs.

he 'black ore' of Katanga is disseminated with malachite in sand-ie or siliceous dolomite. It is a psilomelane [i.e. wad] containing h copper and cobalt and is called *cupro-asbolane.* It is optically

isotropic, and X-ray photographs show it to be colloidal. Soluble HCl with evolution of chlorine. Dehydration curves show that wate lost gradually; at about 400° oxygen is also given off. Analysis scaly cupro-asbolane, sp. gr. 2·37, from Kambove; II, powdery, fr Ruashi; III, powdery, from Shinkolobwe; IV, powdery, from Étoil Congo mine; V, asbolane associated with carnotite, probably fr Ruwe; VI cupro-asbolane from Katanga. Various formulae are giv

	Mn_2O_3.	Co_2O_3.	CuO.	Fe_2O_3.		Al_2O_3.	H_2O.	Insol.	Tota
I.	38·67	13·40	20·79		5·04		11·51	6·88	[97·1
II.	19·40	31·64	22·65	1·72		2·07	16·52	5·36	99·3
III.	10·95	34·28	3·98	9·65		—	16·50*	24·08	99·4
IV.	15·08	6·50	22·44		17·26		20·00*	18·66	99·9
V.	3·60	2·41	nil	4·70		—	—	44·15	—
VI.	17·42	12·74	26·49	5·53		4·69	12·02	15·52	[98·1

I, also MgO 0·90, some Mn as MnO_2. III and IV, * loss on ignition. IV, H_2O 15 V, Mn as Mn_3O_4. VI, CO_2 3·73 as malachite.

L. J. S

De Leenheer (L.). *La mindigite, un nouvel hydroxyde de cobalt.* A Service Mines, Katanga, 1935, vol. 5 (for 1934), pp. 2–7, 2 fi [M.A. **6**–52.]

Zsivny (Viktor) & Tóth (Géza). *Újabb fosszilis gyanta a kiscelli agy ból.*—Zsivny (V.) und Tóth (G.). *Über ein neueres fossiles Harz dem Kisceller Tegel von Budapest.* Ann. Mus. Nat. Hungar Min. Geol. Pal., 1939, vol. 32, pp. 1–6 (Hungarian), pp. 7–11 (G man).

A piece of resin (12·5 g.) from the same locality as kiscellite [M **5**–485] is pale colophony-yellow to dark reddish brown with a green tinge. Sp. gr. 1·018, H.2½; *n* 1·545 for yellow-brown, *n* 1·499 for nea colourless material; no sharp melting-point; soluble in benzene, benzi chloroform, and CS_2, giving in the last an optically active soluti Analysis gave C 85·72, H 11·63, S 0·27, O 2·24, ash 0·14, H_2O— 0·21. is compared with ajkaite, telegdite [M.A. **3**–369], kiscellite, kra zite, &c. V. Z

Clays.

Favejee (J. Ch. L.). *Quantitative röntgenographische Bodenuntersuchu* Zeits. Krist., 1939, vol. 101, pp. 259–270.

A discussion of the method of analysing the constitution of cl by means of X-ray powder photographs. H. S

VEJEE (J. Ch. L.). *Zur Methodik der röntgenographischen Bodenforschung.* Zeits. Krist., 1939, vol. 100, pp. 425–436, 5 figs.

Four clays from the Netherlands were analysed by comparing their ss in the Debye-Scherrer photograph with those of α-quartz, muscoe, kaolinite, and montmorillonite. To overcome the difficulties caused the large number of lines involved and the central blackening of the te, a special camera was used in which air was replaced by pure drogen and an unusually narrow incident pencil of rays was admitted.

H. S.

GELSCHMIDT (G.). *The identification of minerals in soil colloids.* Journ. Agricultural Sci. Cambridge, 1939, vol. 29, pp. 477–501, 5 figs.

A critical account of the identification of minerals in soil colloids by ray, optical, dehydration, and chemical methods. Standard X-ray der data are given for quartz, cristobalite, oxides and hydroxides ron and aluminium, and minerals of the kaolinite, montmorillonite, mica groups. The evidence for the occurrence of the foregoing erals in soil colloids is reviewed. F. A. B.

GELSCHMIDT (G.). *Rod-shaped clay particles.* Nature, London, 1938, vol. 142, p. 114.

Radiating fibres of pyrophyllite from Tres Cerritos, California, show monoclinic layer-lattice with a period of 5·1 Å. along the needle axis, responding with the *a* direction in flaky pyrophyllite [M.A. **6**–45] also with the *c* direction in amphibole and pyroxene. The rods have erfect cleavage parallel to their elongation. Fibres of sepiolite from pandrandava, Madagascar, have a chain-lattice with a period of Å. in the fibre direction, corresponding with amphibole [M.A. **6**–62, 142]. L. J. S.

LLEY (W. P.), WOODFORD (A. O.), DORE (W. H.), & BROWN (S. M.). *Comparative study of the colloids of a Cecil and a Susquehanna soil profile.* Soil Science, 1939, vol. 47, pp. 175–193, 4 figs.

LLEY (W. P.), DORE (W. H.), WOODFORD (A. O.), & BROWN (S. M.). *The colloidal constituents of California soils.* Ibid., 1939, vol. 48, pp. 201–255, 5 figs.

Chemical analyses with X-ray, optical, and dehydration studies of nerous Californian soil samples derived from igneous and sedimentary ks show that the clay mineral present is either of the kaolinite,

montmorillonite, or illite (near to muscovite) type. By X-ray pho graphs before and after partial dehydration it is possible to determ which clay mineral is present, and whether alone or mixed with anot clay mineral. Quartz also is nearly always present, and rutile, zirc and iron oxide minerals often in minor amounts. Clay colloids deriv from sedimentary rocks contain both kaolinite and montmorillon the latter mineral predominating at greater depths, whereas igne rocks weather to kaolinite, halloysite, or illite. Soils derived from weathering of serpentine rocks contain clays both of the kaolinite a montmorillonite type and possibly a finely divided mineral related chrysotile. No dependable correlation between the kind of clay mine and base-exchange capacity has been definitely substantiated by t study, but generally base-exchange capacity is roughly proportio to the SiO_2/Al_2O_3 ratio. F. A. B

Hendricks (Sterling B.). *The crystal structure of nacrite $Al_2O_3.2Si$ $2H_2O$ and the polymorphism of the kaolin minerals.* Zeits. Kri 1939, vol. 100, pp. 509–518, 2 figs.

Nacrite has the space-group C_s^4. The unit cell contains two mo cules of $(OH)_4Al_2Si_2O_5$ and has a 8·94, b 5·14, c 43·0 Å., β 89° 40′. H.

Hendricks (Sterling B.). *Crystal structures of the clay mineral hydra* Nature, London, 1938, vol. 142, p. 38, 1 fig.

Adsorption of water by clay is explained by a hexagonal network water molecules interleaved in the silicate structure of SiO_4 tetrahe with layers of octahedra of O and OH around Mg and Al. L. J. S

Hendricks (Sterling B.). *On the crystal structure of the clay miner dickite, halloysite and hydrated halloysite.* Amer. Min., 1938, vol. pp. 295–301, 1 fig.

The space-group of dickite is C_s^4 (not C_{2h}^6, M.A. **6**–235). Independ $[(OH)_4Si_2Al_2O_5]_n$ layers are superimposed in some random manner w a shift of $(2n+\frac{1}{6})b$. Hydrated halloysite, $Al_2O_3.2SiO_2.4H_2O$, proba has a structure with $[(OH)_4Al_2Si_2O_5]_n$ layers interleaved with $[(H_2O)$ L. J. S

Hendricks (Sterling B.) & Jefferson (Merrill E.). *Structures of kao and talc-pyrophyllite hydrates and their bearing on water sorption the clays.* Amer. Min., 1938, vol. 23, pp. 863–875, 9 figs.

It is proposed that the water layers present in montmorillonite, v miculites, and fully hydrated halloysite consist of extended hexago

s of water molecules the neighbouring oxygen atoms of which are nrated by 3·0 Å. Such nets will have *a* and *b* dimensions close to se for the hexagonal silicon-aluminium-oxygen double tetrahedral ets of all micaceous minerals. They are joined to oxygen ions in the ahedral sheets by one-half the hydrogen atoms of the water mole-s, the remaining hydrogens being involved in binding within the net. iscussion follows of the probable arrangement of the hexagonal water s in partially and fully hydrated vermiculite and halloysite. The arkable absorption properties of clays are supposed to arise from formation of successive water layers as parallel overgrowths upon surfaces of the clay particles. F. A. B.

RNADSKY (W. I.). *On the terrestrial alumophosphorous and alumo-sulphurous analogues of kaolinic alumosilicates.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1938, vol. 18, pp. 287–294.

he possibility of replacement of Si and Al oxygen tetrahedra by , and possibly C tetrahedra is discussed and certain crystallochemical geochemical deductions are made. S. I. T.

M (R. E.) & BRADLEY (W. F.). *A unique clay from the Goose Lake, Illinois, area.* Journ. Amer. Ceramic Soc., 1939, vol. 22, pp. 157–164, 4 figs.; Rep. Investig. State Geol. Surv. Illinois, 1939, no. 53, 20 pp., 4 figs.

deposit of greenish-grey clay up to 6 feet in thickness from Goose e, Grundy County, contains flakes up to 0·015 mm. across, α 1·544, 574, 2V (negative) 8°±. Supercentrifuge fractionation yielded colloid tion: (A) size 0·2—0·05 μ, containing SiO_2 52·79, Al_2O_3 24·99, O_3 4·68, FeO 1·10, MgO 2·70, CaO 0·09, Na_2O 0·20, K_2O 5·86, ignition 7·14, total 99·55, H_2O+ 6·83, H_2O- 5·56; (B) size up to 0·05 μ, taining SiO_2 50·77, Al_2O_3, 24·42, Fe_2O_3 4·21, FeO 1·69, MgO 2·77, 0·47, Na_2O 0·17, K_2O 5·65, ignition loss 10·05, total 100·20, H_2O+ 2, H_2O- 3·11. X-ray powder photographs of the clay together with chemical and optical properties relate it closely to muscovite (variety e). It contains more water lost at low temperatures and less potas-n than illite from Calhoun and Vermilion Counties [M.A. 7–12]; the e-exchange capacity 0·31 is, however, of the same order. The clay arketed under the name 'grundite' for refining vegetable or edible as a mud fluid in oil-well drilling, and for silicate-clay adhesives.

F. A. B.

Ross (Clarence S.) & Stephenson (Lloyd W.). *Calcareous shells repla by beidellite.* Amer. Min., 1939, vol. 24, pp. 393–397, 1 fig.

Molluscan shells occurring at Pontotoc, Mississippi, in Clayton sa (Eocene), consisting of partially rounded quartz grains thinly coa with a mixture of highly ferruginous clay and limonite, have been placed by extremely pure beidellite. An analysis by J. G. Fairchild material with n 1·53, negative, biaxial, birefringence 0·03, gives S 46·95, Al_2O_3 27·26, Fe_2O_3 2·26, FeO 0·32, MnO 0·01, MgO 1·39, CaO Na_2O 0·20, K_2O 0·36, H_2O+ 10·55, H_2O- 11·10, TiO_2 nil, P_2O_5 0· total 100·43. The original structure of the shells is very perfectly p served and it is noteworthy that the calcium carbonate has been co pletely removed. F. A. B

Longchambon (L.) & Zajtmann (J.). *Recherches sur les propri physico-chimiques des argiles kaoliniques.* Bull. Soc. Franç. M 1939, vol. 62, pp. 5–88, 24 figs.

A detailed account of *p*H measurements of various clay specim (1) after treatment with an acid, an alkali, or a salt, (2) after elect dialysis. A further contribution will presumably deal with the conc sions to be drawn from the data so far published. F. A. B

Hagner (Arthur F.). *Adsorptive clays of the Texas Gulf coast.* Am Min., 1939, vol. 24, pp. 67–108, 19 figs.

A chemical, optical, and X-ray study of clay samples from numer pits operated for oil purification along the coastal plain. The princi constituent is montmorillonite and many beds represent the result alteration in situ of volcanic ash. Certain deposits also yield halloysi kaolinite, and allophane. F. A. B

Correns (Carl W.). *Die Tone.* Geol. Rundschau, 1938, vol. 29, pp. 2(218, 2 figs.

A résumé of the crystal chemistry of clay minerals with special ref ence to the results of X-ray investigations of the sea-bottom depo collected on the 'Meteor' expedition to the equatorial Atlantic waters 1925–27. No evidence has yet been found for the existence of an am phous clay mineral in these deposits. F. A. B

Hauser (E. A.) & Reynolds (H. H.). *Alteration of glasses to mo morillonite.* Amer. Min., 1939, vol. 24, pp. 590–597.

Describes the synthesis of a non-swelling montmorillonite from artificial glass having the composition of montmorillonite and from

idian under acid, neutral, and basic conditions. The possibility of blying the method to the commercial production of clays of given racteristics is envisaged. F. A. B.

TTINI (O.). *Über die thermische Zersetzung von Ammoniumpermutit, Ammoniumbentonit und Ammoniumton.* Kolloid-Zeits., 1937, vol. 78, pp. 68–71, 1 fig.

— *Über die thermische Zersetzung gemischter "Ammonium-Kalzium"-Permutite, -Bentonite und -Tone.* Ibid., 1937, vol. 80, pp. 56–59, 1 fig.

The thermal decomposition of analysed specimens of ammonium-rmutite, ammonium-bentonite, and ammonium-clay and of mixed monium-calcium derivatives was studied. The decomposition is in cases continuous, without any sign of breaks; the ammonium-ium derivatives give slightly different results according as they are pared from a calcium derivative by the action of ammonium salts rom an ammonium derivative by the action of calcium salts.

M. H. H.

PPARENT (Jacques de) & HOCART (Raymond). *La léverriérite des formations latéritiques de l'Afrique occidentale française.* Compt. Rend. Acad. Sci. Paris, 1939, vol. 208, pp. 1465–1467, 1 fig.

X-rays show leverrierite to be a result of lateritization of ancient sts in the auriferous area of Siguiri, in which the mica and kaolinite arranged epitaxically. Leverrierite also occurs as white or pinkish ts, shown by X-rays to consist of muscovite and kaolinite, between rtz grains in the sandstone of Bandiagara which is associated with gments of ancient gibbsitic laterite on the highest parts of the teau. C. A. S.

PPARENT (Jacques de). *Théorie de la montmorillonite.* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 279–281.

Arguments, based mainly on several recent complete analyses of gerian bentonites, are adduced in support of the formula $H_2O.Al_2O_3.4SiO_2.5SiO_2+nH_2O$, or, otherwise written, $(OH)_2.MgAl_2.Si_4O_{10}.(OH)_6Si$, h a variable amount of H_2O. This H_2O is the cause of the swelling perty, due to affinity of Si for (OH), and the instability of $Si(OH)_4$. . Hofman, Endell, and Wilm, M.A. **5**–474.] C. A. S.

PPARENT (Jacques de). *Défense de l'attapulgite.* Bull. Soc. Franç. Min., 1938, vol. 61, pp. 253–283, 4 figs.

A reply to criticisms. [M.A. **7**–99, 100.] L. J. S.

Caillère (M^lle S.) & Hénin (S.). *Nouvelles observations sur l'anal thermique différentielle de la kaolinite.* Compt. Rend. Acad. S Paris, 1939, vol. 209, pp. 684–686.

Experiments are briefly described showing the influence on the diff ential thermal analysis curves of kaolinite from Jebel Debar, Alger particularly that portion indicating the exothermal phenomenon 1000°, of the size of the particles (greater or less according as t diameter is above or below 2 μ), of various ions introduced by ba exchange (Ca, K, Fe, the effect decreasing in this order, the phenomen with Fe being less marked than in untreated kaolinite), and of t amount of base fixed and method of fixation (the effect decreases as t amount fixed increases, but is increased by subsequent dialysis). interpretation of the results is discussed. [M.A. **6**–475.] C. A. S.

Beliankin (D. S.) & Ivanova (V. P.) *On the behaviour of montmor lonite at high temperatures.* Compt. Rend. (Doklady) Acad. S URSS, 1938, vol. 18, pp. 279–282, 2 figs.

The heating curve of montmorillonite (askanite) from Aska Georgia, shows three endothermal halts at 50–135°, 612–640°, and 80 850°. The dehydration curve shows a loss of $18H_2O$ up to 100°, 2H at 100–500°, and $1H_2O$ at 500–700°. Similar results were obtained w bentonite and beidellite from Transcaucasia, and with kil from Crim Material that has been heated to 700° (complete dehydration) still sho the same X-ray pattern and birefringence as the original material. Af heating to 900° (above the third halt) it shows a different X-ray patte and is optically isotropic with n 1·535. The first halt on the heati curve therefore corresponds to adsorbed water, the second to consti tional water, and the third to a change in crystalline structure.

L. J. S.

[Belyankin (D. S.) & Ivanova (V. P.)] Белянкин (Д. С.) и Иван (В. П.). О превращениях каолина при нагревании.—Beljank (D. S.) & Ivanova (V. P.). *Ueber die Umwandlungen des Kaol bei Erwärmung.* Академику В. И. Вернадскому к пятидесятилет научной и педагогической деятельности. Акад. Наук СССР [V nadsky jubilee volume, Acad. Sci. USSR], 1936, vol. 1, pp. 555–5 4 figs. (Russian with German summary.)

The endothermal stop of the heating curve for kaolinite is attribut to the formation of free oxides, and the exothermal stop at 950–10 to the transformation of Al_2O_3 into γ-Al_2O_3. The absence of the seco

p in the curves of alumina hydrate and montmorillonite is explained the gradual transformation of Al_2O_3 into γ-Al_2O_3. S. I. T.

ERMYAKOV (V. M.)] Пермяков (В. М.). О гидротермальном синтезе каолина.—PERMJAKOW (W. M.). *Über hydrothermale Synthese des Kaolins.* Академику В. И. Вернадскому к пятидесятилетию научной и педагогической деятельности. Акад. Наук СССР [Vernadsky jubilee volume, Acad. Sci. USSR], 1936, vol. 1, pp. 563–580. (Russian with German summary.)

Air-dried hydrates of silica and alumina in proportion $SiO_2 : Al_2O_3 = 1{\cdot}54$ were heated in an autoclave at 300–335° C. and 285–300 atmospheres. The resulting fine-grained product (n 1·56) showed an X-ray spectrum identical with that of a Crimean nacrite. S. I. T.

FANASIEV (G. D.)] Афанасьев (Г. Д.). Генезис каолинов коры выветривания предгорий северно-западного Алтая и Кузнецкого Алатау.—AFANASIEV (G.). *Genesis of kaolins in the weathering shell of the north-western Altai and Kuznetzk Ala-Tau foot-hills.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. URSS), 1938, no. 13, pp. 117–174, 19 figs. (Russian with English summary.)

The study of the zone of weathering, supported by numerous chemical, mechanical, and thermal analyses, suggests that the formation of kaolinitic-nontronitic clays is primarily due to the hydrothermal processes which were followed by the processes of surface weathering. S. I. T.

ANOVA (V P.)] Иванова (В. П.). Физико-химическое исследование волконскоита (Предварительное сообщение). [*Physico-chemical investigation of volkonskoite* (*Preliminary communication*).] Труд. Второго Сов. Экспер. Мин. Петр., 7–10 мая 1936 г., Акад. Наук СССР [Trans. Second Confer. Exper. Min. Petr., 7–10 May 1936, Acad. Sci. USSR], 1937, pp. 65–77, 8 figs.

Volkonskoite (= wolchonskoite) from Efimyatskaya, Sverdlovsk district, on analysis by Y. N. Knipovich gave: SiO_2 43·22, TiO_2 nil, Al_2O_3 18, Cr_2O_3 21·15, Fe_2O_3 1·23, FeO 0·76, MnO 0·02, MgO 7·73, CaO 2·73, Na_2O 0·13, K_2O 0·11, H_2O+ 8·95, H_2O- 12·48 = 99·99. This corresponds to the formula $1{\cdot}6(Mg,Fe,Ca,Na_2,K_2)O.(Cr,Al,Fe)_2O_3.4{\cdot}4SiO_2.H_2O$, which is near to that of montmorillonite. The texture is porous, α 1·551, γ 1·564, 2V small, negative. It contains numerous small minute dark grains which on heating are transformed into small green

hexagonal flakes (n about 2·45) of what is probably Cr_2O_3. The dehyd tion curve suggests that 2/3 of H_2O is adsorbed, while the remainde of a zeolitic nature. The heating curve gives an endothermal stop 20–150° and two small exothermal stops at 915° and 1270° C. whi as suggested by X-ray study, correspond to the transformation of crystalline lattice. [Cf. M.A. **5**–486.] S. I. T.

[Kultyshev (N. P.)] Култышев (Н. П.). Новые месторождения в конскоита в Удмуртии. [*New deposits of volkonskoite in Udmurt* Ученые Записки Казанского Государственного Университ (Uchenye Zapiski Kazan State University), 1938, vol. 98, no. collection of students works, no. 1, pp. 89–104, 7 figs.

New deposits of volkonskoite (= wolchonskoite) found near Sharl and other localities in Udmurtia (formerly govt. Vyatka) are descril and seven analyses are given. Volkonskoite is found interbedded sandstone of Permian age and it is usually associated with pl remains. It is a clay-like substance, green in colour, average sp. gr. 2· showing a fibrous structure under the microscope with anisotro weakly pleochroic fibres of refractive index above that of Canada balsa S. I. T.

[Serdyuchenko] Serdiučenko (D. P.). *La série isomorphe kérol beidellite dans les silicates argileux.* Compt. Rend. (Doklady) Ac Sci. URSS, 1937, vol. 16, pp. 355–358.

The substitution of Al_2 by Mg_3 in the formula of beidellite leads the formation of the isomorphous series cerolite-beidellite. S. I. T.

Zemiatchensky (P. A.). *On the problem of the origin of kaolin.* Com Rend. (Doklady) Acad. Sci. URSS, 1938, vol. 20, pp. 471–473.

The transition zone between kaolin and granite-gneiss near Bla datnoye, Ukraine, contains a greenish scaly mineral of sp. gr. 2·5 which on analysis gave SiO_2 55·42, TiO_2 trace, Al_2O_3 21·02, Fe_2O_3 3· FeO 1·61, CaO nil, MgO 2·82, Na_2O 0·40, K_2O 7·04, H_2O+ 5·77, H_2O 2·86 – 100·36. The mineral is slightly pleochroic, n 1·557, proba biaxial with a small optic axial angle. It is suggested that this min represents an alteration product of biotite, a stage of kaolinitization S. I. T.

Jung (Hermann). *Über ein Tonmineral (Dickit) von Schmiedefeld i. Th* Chemie der Erde, 1938, vol. 11, pp. 445–447, 1 fig.

A compact white to pale bluish-green crust on chamosite gave S 45·97, Al_2O_3 40·15, Fe_2O_3 0·21, Cr_2O_3 0·02, H_2O+ 13·78, H_2O- 0·07

·20, sp. gr. 2·600. The optical characters are not distinctive, but the loss of water (2·14 %) at 500° and the X-ray pattern suggest kite rather than kaolinite or nacrite. L. J. S.

HEISCHWILI (L.), BÜSSEM (W.), & WEYL (W.). *Ueber den Metakaolin.* Ber. Deutsch. Keram. Gesell., 1939, vol. 20, pp. 249–276, 17 figs.

The thermal decomposition of natural and artificial kaolin and of lerite was studied by X-rays and the fluorescence spectra with in. Morin shows a strong fluorescence with soluble aluminium salts γ-Al_2O_3, slight with Al hydroxides, and none with α-Al_2O_3. The ht fluorescence with kaolin is increased after this has been heated 400–700°, owing to the formation of metakaolin [M.A. **2**–505]; ximum fluorescence is reached after heating at 800°, marking the nation of γ-Al_2O_3; at higher temperatures there is a rapid decline, to recombination of Al_2O_3 and SiO_2. The formation at 500–700° of akaolin, consisting of linkages of SiO_4 and AlO_4 groups, is supported X-ray examination. L. J. S.

a (M. R. Anantanarayana). *On the possible occurrence and composition of a new kind of mineral substance in some clays.* Rec. Mysore Geol. Dept., 1938, vol. 36, pp. 108–117.

nalyses of three samples of clay from near Karekurchi, Tumkur rict, Mysore, show high K_2O 6·35 – 8·92 %, with SiO_2 42·57 – 46·59, O_3 30·77 – 33·12, H_2O+ 6·20 – 8·33 %. Analyses of the portions luble in HCl approximate to hydromuscovite [Min. Mag. **24**–516]. s residue, digested with strong H_2SO_4 (and Na_2CO_3 to take up the ble silica), left a residue of quartz and felspar (15·30 – 42·73 %), le the soluble portion contained SiO_2 8·47 – 38·71% with high Al_2O_3 K_2O. It is suggested that the end-product would correspond to scovite with all Si replaced by Al and much O by OH. [Cf. illite, A. **7**–13.] L. J. S.

NERON (Guy). *L'argile d'Andenne : étude thermique et étude röntgenographique.* Bull. Soc. Belge Géol., 1939, vol. 48 (for 1938), pp. 636–649, 1 pl., 2 text-figs.

Two clays (SiO_2 53, Al_2O_3 32 %, and SiO_2 71, Al_2O_3 18 %) from denne, Belgium, examined microscopically, thermally (time-tempera- e curves), and by X-rays, were found to consist of a mixture of oysite and kaolinite with some quartz and calcite. L. J. S.

Gieseking (J. E.). *The mechanism of cation exchange in the m morillonite-beidellite-nontronite type of clay minerals.* Soil Scier 1939, vol. 47, pp. 1–12, 1 pl., 4 text-figs.

Absorption of large substituted ammonium ions (piperidine, anil β-naphthylamine, gelatine, &c.) by these clay minerals produces a w (001) spacing in the lattice with more intense diffractions; and they very effective in coagulating the clay. Montmorillonite saturated v the complex ions does not show water absorption and swelling as Ca-, Na-, and H-montmorillonite; and the (001) spacing is then ir pendent of the water content. L. J. S

Tarr (W. A.) [1881–1939] & Keller (W. D.). *Some occurrence kaolinite deposited from solution.* Amer. Min., 1937, vol. 22, pp. 9 935.

Snow-white glistening kaolinite (α 1·561, γ 1·566) occurs in crev and cavities in shales and dolomite-rock at several localities in Misso It is associated with quartz and sulphide minerals. L. J. S

Kimizuka (Kōjirō). *On the rōseki-deposit (aggregation of pyrophyl kaolinite and diaspore) at Mituisi, Bizen province, Japan.* M Coll. Sci. Kyoto Univ., Ser. B, 1938, vol. 14, pp. 73–122, 44 figs

The 'rōseki' (wax-stone) [M.A. **6**–137] of Mituisi occurs as irregu masses, representing altered xenoliths, in liparite and felso-liparite. liparite is intrusive into Palaeozoic shales, and is itself intruded dikes of felso-liparite. The alteration (pyrophyllitization), consist mainly of extraction of silica with concentration of alumina, has usu been attributed to hydrothermal action, but reasons are now given t it was pneumatolytic. Shale xenoliths in the liparite consist wholly of py phyllite, while other xenoliths consist of a mixture of pyrophyllite, k lin, and diaspore. Chemical analyses are given of each of these miner Diaspore, as crystals up to 1 cm., gave $a : b : c = 0{\cdot}9362 : 1 : 0{\cdot}5943$, w the forms *p h m b* [Dana's letters]. Alunite and pyrite are someti also present. L. J. S

Economic Minerals and Ore-deposits.

Ramdohr (Paul). *Les progrès récents dans la connaissance des gisem métallifères.* Ann. Soc. Géol. Belgique, [1939], supplement to vol (for 1938–39), lxxix pp., 2 figs.

An abridged translation by L. Calembert from the German [M **7**–147]. L. J. S

ɔsoN (A. S.). *The influence of electric potential in ore deposition in the Timiskaming district, Ontario.* Univ. Toronto Studies, Geol. Ser., 1938, no. 41, pp. 23–32.

he associations and order of deposition of the several minerals are sidered in connexion with their order in the potential series [M.A. 48]. L. J. S.

MSON (Ellis). *History of the study of ore minerals.* Amer. Min., 1939, vol. 24, pp. 137–154. (Presidential address.)

well-documented account of the study of sections of opaque erals with special reference to recent developments, and a detailed iography. F. A. B.

(E. G.). *The concentration of the less familiar elements through igneous and related activity.* Amer. Journ. Sci., 1938, vol. 35A, pp. 385–404.

general review, stating the average amounts of various chemical ents present in igneous rocks, and their concentration by processes agmatic differentiation and pneumatolysis, with special reference to sits formed by volcanic gases. Segregation of elements possessing ar atomic radii is also considered. L. J. S.

SS (O.), SIMPSON (D. J.), & PAVER (G. L.). *Some magnetometric and gravimetric surveys in the Transvaal.* Bull. Geol. Surv. South Africa, 1936, no. 7, 27 pp., 8 pls. Price 2*s*.

sides structural features, nickel-bearing pipes and chromite seams investigated at Vlakfontein, Rustenburg. Close working with a ion balance gave satisfactory results with the nickel ore, and the ical magnetic field balance also gave results where magnetite caused nterference. The latter method gave unsatisfactory results with the mite, probably due to external influences. E. D. M.

NSDORFF (D.). *Note on the occurrence of visible gold at Randfontein Estates.* Trans. Geol. Soc. South Africa, 1938, vol. 40 (for 1937), pp. 121–125.

isible gold occurs as crystals, thin seams, and replacements. It is ciated with and later than carbon, and occurring along bedding-ts is apparently post-folding in date. Appreciable enrichment ws low-angle thrusts. E. D. M.

Macgregor (A. M.), Ferguson (J. C.), & Amm (F. L.). *The geology of the country around the Queen's mine, Bulawayo district.* Bull. G Surv. Southern Rhodesia, 1937, no. 30, 175 pp., 1 map, 19 p 5 text-figs. Price 5*s.* 6*d.*

The district, which lies north of Bulawayo and covers a thous sq. miles, includes the southern portion of the Bembesi gold belt a embraces some 300 gold mines which are described. The eastern h of the area consists of pre-Karroo rocks, mostly granite and greenst including pillow-lavas, while the western half comprises Karroo s ments and basalts, partly overlain by Kalahari sands. Kimber occurrences are described, but are uneconomic. The gold, practic confined to the greenstones, occurs in quartz-veins with pyrite, r pickel, chalcopyrite, and tetrahedrite, and also in lodes and in elu deposits. E. D. M

Macgregor (A. M.). *The geology of the country around Hunters Ro Gwelo district.* Bull. Geol. Surv. Southern Rhodesia, 1937, no. 78 pp., 1 map, 8 pls. Price 2*s.* 3*d.*

This is an area of 750 sq. miles representing chiefly a N.-S. belt Basement Schist divisible into three distinct rock-groups and flan on both sides by granite. Of the nearly 90 gold mines described, most important are impregnations in banded ironstone near the gran while others consist of quartz-veins with pyrrhotine in the Magnes System. Short descriptions are also given of the occurrence of ores iron, manganese, nickel, and copper, and of limestone, clay and bary Nine analyses are given of igneous rocks. E. D. M

Phaup (A. E.). *The geology of the Umtali gold belt.* Bull. Geol. Su Southern Rhodesia, 1937, no. 32, 186 pp., 1 map, 15 pls. Price

This area consists of 500 sq. miles of rugged country with 250 g mines. Just north of Umtali, a strip of Basement Schists compris greenstones and Mbeza sediments run E.–W. across the area, while remainder consists essentially of granite. Other intrusive rocks fou scattered through the area are serpentine and related rocks, and a porphyry, felsite, and dolerite. In addition to gold, brief referenc made to the occurrence of gibbsite, mispickel, chrysotile, bismuth, cl chalcopyrite, graphite, galena and oxidized lead ores, limestone, mol denum, pyrite, talc, and tungsten. Alluvial gold is widespread, w most of the gold mined comes from quartz-veins in the Penhalo quartz-diorite and greenstone. These veins usually contain gale

ite, pyrrhotine, and chalcopyrite. Sixteen new analyses of rocks and erals are given. E. D. M.

RGUSON (J. C.) & WILSON (the late T. H.). *The geology of the country around the Jumbo mine, Mazoe district.* Bull. Geol. Surv. Southern Rhodesia, 1937, no. 33, 137 pp., 1 map, 7 pls. Price 4*s.* 6*d.*

he area, with its centre some 20 miles north of Salisbury, is about sq. miles in extent and consists chiefly of a broad N.–S. strip of ement Schists bounded E. and W. by granite. The Basement Schists prise the Iron Mask series, greenstones, and Shamva grits, and have n invaded by a variety of igneous rocks. Of the 100-odd gold mines cribed, the Jumbo is outstanding. The gold ore-bodies include pregnations in porphyry and banded ironstones, and veins in green- e and granite. Brief mention is also made of the occurrence of estone (primary and secondary), pyrite, and scheelite. Chemical lyses are given of alumina-rich rocks, granodiorite, tonalite, gabbro, phyry, and picrite. E. D. M.

UP (A. E.) & DOBELL (F. O. S.). *The geology of the Lower Umfuli gold belt, Hartley and Lomagundi districts.* Bull. Geol. Surv. Southern Rhodesia, 1938, no. 34, 150 pp., 1 map, 11 pls. Price 5*s.*

e area, roughly 35 miles E.–W. and 15 miles N.–S., is situated to north of Hartley and Gadzema. Greenstones and associated rocks upy a relatively small area bounded on the east by extensive granite on the west by sediments of the Lomagundi System. Granites in area are of three types, one of them containing abundant xenoliths, other intrusions occur in addition. Intermediate in age between the nstones and the Lomagundi System is the Deweras series containing gdaloidal lavas. Gold, with subordinate silver, occurs in two belts, Gadzema belt, including the Giant mine, in the SE. and the Lower fuli belt more central. Ores of the former are sulphidic impregnations anded ironstones containing pyrite, marcasite, and pyrrhotine, while latter consist chiefly of quartz-veins. Analyses of igneous rocks and are given. E. D. M.

NDELSSOHN (E.). *Gold deposits of the central Murchison Range, Transvaal.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), pp. 249–272, 5 pls., 3 text-figs.

he area described extends in a strip eastwards from Gravelotte for ut 10 miles and consists of schists, quartzite, banded ironstone, and estone with nearly vertical bedding and invaded by dolerite dikes.

Shear zones occur in the limestone, the most important being t 'Antimony Line'. Auriferous veins are of three types representi successive stages of mineralization. 'Mineralized Banded Ironsto consists of quartz with carbonates, plagioclase, sericite, and biotite, a contains mispickel, pyrite, and pyrrhotine. 'Tetrahedrite Reef' carr in addition tetrahedrite, berthierite, marcasite, and chalcopyrite, wh 'Stibnite Reef' is essentially a replacement vein in limestone charact ized by stibnite as the dominant sulphide mineral. Small quantities cinnabar also occur in quartz-veinlets. E. D. M

Swiegers (J. U.). *The Black Reef series in the Klerksdorp and Ra fontein areas.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (1938), pp. 177–191, 4 pls.

Quartzites and shales are briefly described and the conglomerates detail. Secondary minerals in the latter are quartz, pyrite, carb blende, chalcopyrite, chlorite, rutile, tourmaline, leucoxene, kao limonite, and gold. The gold may be of hydrothermal origin.

E. D. M

Willemse (J.). *The gold occurrences south-west of Pietersburg.* B Geol. Surv. South Africa, 1938, no. 12, 38 pp., 3 maps, 4 Price 6*d*.

This area includes the mines on Eersteling, source of South Afric first reef gold, and those of Mount Maré. The principal formati belong to the Swaziland System, which is subdivided into ortho- a para-rocks and which is invaded extensively by Old Granite. Intrusi of diabase and quartz-porphyry occur and a patch of Bushveld pyro nite. In the SW. these rocks are bordered by Black Reef which underlain by lavas and sediments of doubtful age. The reef gold occ as quartz veins in the Swaziland rocks and Old Granite and also mineralized fracture zones in Swaziland basic schists. A curving Swa land-Granite boundary, minor fractures, vein quartz, and curving intersecting veins are regarded as favourable conditions for g Alluvial gold also occurs. E. D. M

Hawley (J. E.). *The association of gold, tungsten, and tin at Outp Islands, Great Slave Lake.* Univ. Toronto Studies, Geol. Ser., 19 no. 42, pp. 53–66, 1 pl.

Shear zones and lenticular bodies of glassy quartz (perhaps magma in the micaceous quartzite of pre-Cambrian sediments show a divers of mineralization with Cu, Fe, Au, W, Sn, Mo, &c. Assays show 0·0

0% Sn, but no tin mineral has been identified. The origin of andalu- with cores of blue corundum occurring in the quartz bodies [M.A. 17] is also discussed. L. J. S.

LDWELL (Wm. E.). *The gold content of sea water.* Journ. Chem. Education (Amer. Chem. Soc.), 1938, vol. 15, pp. 507–510.

A review of recent determinations; the gold content is not greater n about 0·2 mg. per metric ton. M. H. H.

ERVIZ (V. M.)] Дервиз (В. М.). Месторождение магнитного железняка горы Благодати. Геологический очерк Кушвинского района. —Derviz (V. M.). *The deposits of magnetite on the Blagodat mountain.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. URSS), 1938, no. 12, pp. 5–44, 3 maps, 4 text-figs. (Russian with English summary.)

The magnetite deposits of Mount Blagodat in the Urals, exploited c. 1737, occur interbedded with metamorphosed sediments of Devo- n (?) age and are injected by syenite sills. The ores are of two types: magnetite-garnet, (2) magnetite-felspar (spotted ore). The ores of first type are considered to be of a contact-metasomatic origin, while se of the second type are regarded as products of pneumatolytic nations (ore magma) derived from the syenitic magma. Secondary s are represented by martite and brecciated ore. A number of lyses of minerals, ores, and rocks is given. S. I. T.

FFET (Josué-Heilman). *Sur la genèse des gisements de fer de la rive droite du fleuve Rouge (Tonkin).* Compt. Rend. Acad. Sci. Paris, 1939, vol. 208, pp. 112–114.

The iron-ore deposit, consisting of magnetite, haematite, limonite, , that extends for some 80 km. between Laokay and Yenbay along right bank of the Red river, is a metamorphosed sediment of Cam- an or pre-Cambrian age. It appears to have been deposited on a pure dstone as a chemical precipitate from solution in continental drain- waters, or perhaps is of hydrothermal and magmatic origin. C. A. S.

EVENSON (John S.). *Copper-tourmaline-hematite veins at Highland Valley, B.C.* Univ. Toronto Studies, Geol. Ser., 1939, no. 42, pp. 127–132, 1 pl., 1 text-fig.

Hypothermal veins in quartz-diorite contain much tourmaline with artz, magnetite, and specular haematite, together with chalcopyrite

and pyrite and secondary chalcosine. The black granular tourmal has ω_D 1·6865, ϵ_D 1·6500, and dispersion $\omega_F - \omega_C$ 0·0218, $\epsilon_F - \epsilon_C$ 0·02

L. J. S

Van Eeden (O. R.), Partridge (F. C.), Kent (L. E.), & Bran (J. W.). *The mineral deposits of the Murchison Range, east Leydsdorp.* Mem. Geol. Surv. South Africa, 1939, no. 36, 163 p 1 map, 10 pls., 13 text-figs. Price 7*s.* 6*d.* (including map).

This is a revision of Memoir no. 6 by A. L. Hall, published 1912, map on a scale 1:100,000 covering a strip 50×12 miles. The Swazila System is divided into three series of sediments and lavas together w banded ironstone, carbonate rocks, and serpentine, and was invad first by the Rooiwater complex comprising both a hornblende-gran and a gabbro phase with magnetite bands. Widespread invasion Old Granite followed and a swarm of sub-parallel Karroo dolerite di also occurs, besides earlier diabase and lamprophyre. Mineralizat throughout the area due to the Old Granite is of the mispickel-pyr pyrrhotine type and along a certain zone there also occur later antimo minerals. Ores examined in reflected light are described, the miner including corynite, chalcostibite, and kermesite. Pegmatites in the Granite contain a variety of minerals, brief notes being written on aq marine, cassiterite, chrysoberyl, corundum, rose-quartz, tourmaline, a scheelite. Emerald occurs in schist invaded by the pegmatites and described, together with short notes on the associated minerals apat biotite (with analysis), epidote, albite-oligoclase (with analysis), garn molybdenite, molybdite, muscovite, nontronite, quartz, scapolite, s phides, and tourmaline. Reference is finally made to ores of iron, an mony, and mercury, to baryte and other minerals of less importance.

E. D. M

Kupferbürger (W.) & Lombaard (B. V.), with Wasserstein (B.) Schwellnus (C. M.). *The chromite deposits of the Bushveld igne complex, Transvaal.* Bull. Geol. Surv. South Africa, 1937, no. 48 pp., 2 maps, 6 text-figs. Price 6*d.*

Chromite occurs in three groups of seams at different horizons wit the Bushveld norite in the Lydenburg and Rustenburg districts. I found associated with bowlingite and orthopyroxene in seams abou foot in thickness as rough octahedra and contains about 17% Al_2O_3 10% MgO. Traces of platinoids are present and in addition magnet uvarovite, and plagioclase, while the country-rock is generally pyro

or anorthosite. The ore is suitable for refractory purposes and the mical industry, and the prospects are good. E. D. M.

ODLAND (Austin William). *The petrography and petrology of the Lower Cambrian manganese ore of west Merionethshire.* Quart. Journ. Geol. Soc. London, 1939, vol. 95, pp. 1–35, 2 pls., 3 text-figs. band, 1 foot thick, of very fine-grained and chert-like rock is inter- ded in Harlech grits and mudstones. It shows alternating red and ow bands, and consists of spessartine (euhedral crystals 0·004– 8 mm., *n* 1·805), rhodochrosite (*n* 1·60–1·80), quartz, and rare lonite. Analyses show MnO 37–49%, and from analyses of the luble portion the composition of the garnet (MnO 37–39%) is calcu- d. The material is a product of metamorphism of a colloidal sedi- t of $MnCO_3$ with clayey material. L. J. S.

(S.). *Microscopic characters of some manganese minerals, found in the lateritic manganese-ore of Belgaum district, S.W. India.* Current Sci. Bangalore, 1939, vol. 8, pp. 258–259.

he ore consists mainly of psilomelane with polianite. Romanechite hollandite (not before recognized in secondary ores from India) r in the psilomelane, the former as needles and the latter as grains. reflective power and etching reactions of these minerals are given. L. J. S.

(S.). *Données nouvelles sur les propriétés physiques des constituants minéralogiques de la vredenburgite des Indes.* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 518–520.

he percentage of jacobsite in the samples of vredenburgite examined ed from 84·15 to 65·45. X-ray examination showed no difference in jacobsite in them from that of jacobsite from Sweden, but there distinct differences in the permanent specific magnetization. This ought possibly to be the result of slight differences in composition to differences in the conditions of formation which probably resulted n separation into the two constituents—hausmannite and jacobsite an originally homogeneous material through changes of pressure temperature. [M.A. **7**–157, 169, 208.] C. A. S.

ITCH (Basile). *Sur les gisements des minerais oxydés de nickel en Oural.* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 652–653.

he chief deposit is near Orsk in the southern Urals. It extends zontally, some 4–20 m. thick, over some hundreds of km. at a erate depth below a stratum, 1–4 m. thick, rich in Fe. As worked,

the ore contains about 2% Ni, mainly as garnierite. It has been conc trated by atmospheric action from the underlying serpentine, whicl the unaltered condition contains up to a few tenths of 1% of Ni. total available Ni is estimated at 300,000 tons. Less important depo occur in the middle Urals within 100 km. of Sverdlovsk. The ore, l wise derived from serpentine, contours a large mass of marble wh has greatly affected the decomposition of the serpentine. Its Ni cont varies from 10–15% in immediate contact with the marble to 1–1· at a few metres distant therefrom. As worked, the ore contains 2–3% and the amount available is estimated at 100,000 tons. C. A. S

Henderson (J.). *The copper resources of New Zealand.* New Zeal Journ. Sci. Techn. 1939, vol. 20, pp. 177B–181B.

The chief copper occurrences in New Zealand are described. Cop minerals have been found at many localities, but the total product has amounted to only 5032 tons of ore. W. C. S

Kratochvíl (František). *Petrografické a metalogenetické poměry n ňatého ložiska u Mutěnína v Českém Lese.* [Petrographic and me logenetic features of the cupriferous deposit at Mutěnín (= Mutt dorf) in the Bohemian Forest.] Věstník Státního Geol. Úst Československé Republiky, 1937, vol. 13, pp. 146–158, 2 p 2 text-figs. (Czech with French résumé).

At Hostouň an amphibolite (metamorphosed diorite) is penetra by veinlets of pyrrhotine. At Mutěnín ore veins in sericite-chlor phyllites show a deposition of gangue minerals in the order: dolomit calcite—quartz; and the copper ores seem to have been deposi contemporaneously with both carbonates and quartz. Chalcopyrit the predominating ore mineral, with some primary bournonite secondary bornite and chalcosine. In the oxidized zone malachite p dominates, with some phosphorochalcite and lampadite. The ph phorochalcite has a radial and zonal structure with extinction-a 30° and birefringence 0·070. F. S

[Popov (V. M.)] Попов (В. М.). Парагенезис марказита в Им тавском медном месторождении (Казахстан).—Popov (V. *Paragenesis of markasite* [sic] *in the Imantavsky copper dep Kazakhstan.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Геол. (Bull. Acad. Sci. URSS, Cl. Sci. Math. Nat., Sér. Géol.), 1 pp. 1127–1134, 6 figs. (Russian with English summary.)

intergrowths of crystalline and colloform primary marcasite with rite, chalcopyrite, and limonite are frequently found in the Iman-rsky copper deposits of Kazakhstan, Central Asia, although the secon-y marcasite replacing other sulphides is more common. S. I. T.

ROVICK (S. A.) & GOTMAN (J. D.). *Content of rare and other elements in the cassiterites of different genesis from USSR deposits according to spectrum analysis data.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 23, pp. 351–354.

Cassiterites from pegmatite veins contain Nb, Ta, Zr, Fe, and Mn, d often also Ga, Be, and Hf, but no V. Those from quartz, quartz-spar, and sulphide veins contain much V and some W, In, and Mn. ood-tin contains Pb, Zn, Mo, Sb, and Ge. L. J. S.

OLMES (Arthur). *The origin of primary lead ores: paper II.* Econ. Geol., 1938, vol. 33, pp. 829–867, 2 figs.

A reply to criticisms of a previous paper [M.A. **7**–158]. L. J. S.

VÁČEK (Radim). *Několik poznámek o našich rtuťnatých rudách.* [Some remarks on our mercury ores.] Věda Přírodní, Praha, 1938, vol. 19, pp. 154–156, 2 figs.

The cinnabar ore of Merník in eastern Slovakia contains irregular sses and zonal and dendritic aggregates of metacinnabarite which ve escaped alteration to the more stable cinnabar. Similar relics of e earlier metacinnabarite are found in cinnabar from Dědova hora in hemia and from Baia Arinelii in Transylvania. Later cinnabar from rník of rare acicular habit shows the forms *r c m n q λ i* and (90$\bar{1}$2) na's letters]. Tetrahedrite from several localities in the Slovakian albite-copper sulphide veins contains considerable amounts of mer-y; at Kotrbach there are two varieties of schwazite, one dark with 6·25% and another lighter with 16·5%. F. S.

EMENENKO (N. P.)] Семененко (Н. П.). Пегматитовый процесс графитовых месторождений в связи с изучением месторождений Петровского района УССР.—SSEMENENKO (N. P.). *Pegmatitprozess der Graphitlagerstätten im Petrowschen Bezirk des Dnjepropetrowsker Gebietes.* Изв. Акад. Наук СССР, Отд. Мат. Ест. Наук, Сер. Геол. (Bull. Acad. Sci. URSS, Cl. Sci. Math. Nat., Sér. Géol.), 1937, pp. 1105–1125, 4 figs. (Russian with German summary.)

Graphite is found in metamorphic rocks and in the pegmatite veins Petrovsk district of Ukraine. Graphitization is attributed to the ichment of the pneumatolytic phase of the granitic magma in carbon

dioxide derived from the assimilation of carbonate and bitumin rocks. [Cf. M.A. 7–149.] S. I. T

[Polyanin (V. A.)] Полянин (В. А.). Минералогия и генезис ме зойских бокситов восточного склона Урала.—[*Mineralogy genesis of Mesozoic bauxites of the eastern slope of Ural Mountai* Ученые Записки Казанского Государственного Университ (Uchenye Zapiski Kazan State University), 1938, vol. 98, nos. 5 Geology, nos. 11–12, pp. 153–210, 2 pls., 7 text-figs.

The following minerals found in bauxites are described: alumo gibbsite (first generation—tabular and prismatic, α 1·568, γ 1·587; sec generation—monoclinic habit, α 1·570, γ 1·586), quartz, opal, chalcedo halloysite (n 1·523–1·540), kaolinite, harmotome (SiO_2 56·04, Al 13·65, CaO 1·36, BaO 11·02, ign. loss 14·99 = 97·06; sp. gr. 2·3 2·335), heulandite (α 1·494, γ 1·505), magnetite, haematite, goeth lepidocrocite, chalybite, chlorite (pseudo-hexagonal aggregates, α 1·6 γ 1·645), pyrite, gypsum, baryte, and vivianite (pleochroic, α 1·5 β 1·600, γ 1·636). It is suggested that bauxites were deposited fr colloidal solutions together with a certain amount of detrital mater S. I. T

Orlov (Alexandr). "*Primární*" *a* "*sekundární*" *facie bauxitu na mojt ském ložisku.* [The so-called primary and secondary facies of baux in the Mojtín deposit, Slovakia.] Věstník Státního Geol. Ústa Československé Republiky, 1938, vol. 14, pp. 18–25, 2 pls. (Cz with German summary.)

The bauxite at this locality [M.A. 7–153] is of two types, both forn at the same period but under different conditions. The 'prima facies is brown and rich in ferric oxide (18·97%) and silica (15·76% the 'secondary' is white or yellow with at most 6% Fe_2O_3. The for belongs to the limestone strata, where it forms irregular bodies; latter fills pockets in dolomite and occurs as interstitial material dolomitic conglomerates and breccia. In other places bauxite and qua pebbles are cemented by calcite. F. S

Lapparent (Jacques de) & Hocart (Raymond). *Sur la nature mine logique des hydroxydes d'aluminium dans les bauxites de l'Afri occidentale française.* Compt. Rend. Acad. Sci. Paris, 1938, vol. 2 pp. 202–203.

West African bauxites usually contain their Al_2O_3 in the form gibbsite. A type of bauxite derived from schistose sandstone in

ghbourhood of Segou-Markala on the Niger (French Sudan) contains sses of pisolite, often fissured and surrounded by crystals of gibbsite, which X-ray examination shows to be themselves mainly boehmite. relative positions of the various deposits show that gibbsite is ned below, boehmite above, the water-level, and that in this locality hmite was first formed and later passed into gibbsite. Bauxites taining diaspore are only found in areas of subsidence, and are absent n West Africa. C. A. S.

HOPP (D. W.). *Memorandum on the occurrence of bauxite in British Guiana*. Bull. Geol. Surv. British Guiana, 1938, no. 8, iii+68 pp., 1 map.

ollected notes on the occurrence of bauxite in various districts, ether with many chemical analyses. L. J. S.

RAES (L. J. d[e]) & LEINZ (V.). *Agalmatolithvorkommen in Minas Geraes (Brasilien)*. Chem. Erde, 1938, vol. 12, pp. 95–103, 6 figs.

veral large deposits of agalmatolite occur banded with schistose ss invaded by granite near Pará de Minas. The material consists ly of fine-scaled pyrophyllite with relics of kyanite, and it is sup- d to have resulted by the pneumatolytic-hydrothermal alterations nds of kyanite-schist: $Al_2O_3.SiO_2+3SiO_2+H_2O = Al_2O_3.4SiO_2.H_2O$. L. J. S.

AY (Joseph M.). *Ilmenite-hematite-magnetite relations in some emery ores*. Amer. Min., 1939, vol. 24, pp. 162–170, 4 figs.

study of polished sections of emery ores from various localities ls that the haematite crystals are bordered by exsolution ilmenite, wing that the haematite is chiefly of primary origin. Exsolution nite in haematite is of two types: an earlier dark-coloured variety, down parallel to (0001); and a later lighter-coloured variety, which ns a rhombohedral pattern of exsolution blades. Where haematite ts only as exsolution blebs in corundum, the corundum shows no ting, whereas parting is observed when the haematite has separated nly as 'needles'. F. A. B.

NTE (Antoine). *Sur l'évolution du phosphate de chaux dans le Toarcien de l'Échelle (Ardennes)*. Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 53–56.

section through the deposit is described with several analyses wing a P_2O_5 content in the nodules and ammonite fragments of 2%, and in the surrounding sandy clay of 1–1·9%. The origin is

considered to be probably similar to that suggested by Cayeux (ib 1938, vol. 206, p. 1494). C. A. S

Cayeux (Lucien). *Rapports entre la constitution des phosphates en gr et la composition des dépôts stériles auxquels ils sont subordon* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 268–269.

These relations are discussed. In the deposits of Tunis the phosph grains are packed with diatoms, while not one occurs in the argillace mud in which the grains occur. C. A. S

Landes (Kenneth K.). *Origin of the Quebec phlogopite-apatite depo* Amer. Min., 1938, vol. 23, pp. 359–390, 9 figs.

Descriptions are given of 21 mineral species collected from sev of the abandoned mines. The various theories of the origin of th deposits are mentioned and a new one suggested. A granitic mag very rich in phosphorus was contaminated with dolomite and crys lized first as pyroxenite followed by microcline-pegmatite, with a l hydrothermal phase. L. J. S

Fiveg (M. P.). *The apatite deposits of the Khibinian tundras.* Geolog investigations of agricultural ores USSR. Trans. Sci. Inst. Fe lizers and Insecto-Fungicides, 1937, no. 142, pp. 8–21, 11 figs.

A brief review of the Khibina tundra apatite deposits is given the principal rock-types are described. S. I. T

Kazakov (A. V.). *The phosphorite facies and the genesis of phosphor* Geological investigations of agricultural ores USSR. Trans. Inst. Fertilizers and Insecto-Fungicides, 1937, no. 142, pp. 95–

A review is given of the mode of occurrence and of the various hy theses proposed to explain the genesis of phosphorites. The phospho facies of sediments are usually found along the continental shelf. precipitation of calcium phosphate is due to the currents carry phosphorus salts in solution ascending from the open sea into a regio reduced CO_2 pressure. S. I. T

Kurman (I. M.) & Usacheva (Z. M.). *Geology and origin of the dat deposits of the laccoliths of the Mineral Springs region (north Ca sus).* Geological investigations of agricultural ores USSR. Tr Sci. Inst. Fertilizers and Insecto-Fungicides, 1937, no. 142, pp. 1 134, 4 figs.

Datolite-rich rocks (B_2O_3 5–10%) are found among the cont metamorphosed sediments surrounding trachyliparite laccoliths

thern Caucasus. Together with datolite are found garnet, calcite, hnite, fluorite, aegirine-augite, pectolite(?), and sillimanite(?). The olite-rich rocks are said to be formed through the action of boron- magmatic emanations or solutions acting on the carbonate rocks rounding the intrusions. S. I. T.

RLOCK (R. L.) & HOLLINGWORTH (S. E.). *Gypsum and anhydrite: Celestine and strontianite.* 3rd edition. Special reports on the mineral resources of Great Britain, vol. 3, Mem. Geol. Survey, 1938, v+ 98 pp., 12 figs. Price 2*s.* 6*d.*

Particulars are given of the characters, uses, and modes of occurrence hese minerals, with full details of mines and quarries in different ts. There are no workable deposits of strontianite. At the time of issue of the first and second editions [M.A. 1–84] of this volume, ydrite was a waste product. It is now mined in large quantities at ngham, Co. Durham, for the manufacture of ammonium sulphate, huric acid, and plaster. L. J. S.

WELLNUS (C. M.). *Vermiculite deposits in the Palaboroa area, N.E. Transvaal.* Bull. Geol. Surv. South Africa, 1938, no. 11, 27 pp., 5 figs. Price 6*d.*

rmiculite occurs throughout an area of 7 square miles near the ti-Olifants confluence in pyroxenite or peridotite of the Swaziland tem. It is intimately associated with apatite and both are genetically nected with intrusive syenite, the vermiculite being subsequently ived from phlogopite either by weathering or hydrothermal agency. miculite forms flakes up to 9 inches across and occurs with the tite in irregular bodies, streaks, or disseminations. Optical properties wo specimens show considerable differences. An appendix by J. G. chinger deals with the preparation and testing of samples and udes three chemical analyses by L. W. Vermeulen. After exfoliation heating, the material is marketed for insulating purposes. E. D. M.

SER (D. J. L.). *The ochre deposits of the Riversdale district, Cape Province.* Bull. Geol. Surv. South Africa, 1937, no. 9, 21 pp., 1 map, 4 text-figs. Price 3*d.*

Yellow and red ochre occur near Albertinia in various forms in shales he Bokkeveld series altered to white and coloured clays and overlain a 6-foot capping of silcrete. Analyses, showing a silica percentage of least 12 in the red and 24 in the yellow, prove that the iron is derived

from the shale and presumably concentrated by surface waters. ' formation of the ochre was intimately associated with that of the silc and they are probably of late Tertiary to recent age. E. D. M

Wybergh (W.). *The building stones of the Union of South Africa.* M Geol. Surv. South Africa, 1932, no. 29, 238 pp., 1 map, 1 pl text-figs. Price 7*s.* 6*d.*

The principal building stones are classified as sandstone, granite, limestone, and their properties are examined in some detail. The c mon forms of weathering are described, those of sandstone used building being referred to as lifting, scaling, fretting, and cracking. short description is given of the 144 most important South Afri building stones which are, in varying degree, classified on tests follow Hirschwald, and their localities are shown on a map. The chief pro ties concerned are specific gravity, porosity, granular cohesion, crush stress, tensile strength, and water absorption, and the calculated c is regarded as an indication of weather resistance. Details of the meth of testing are given. E. D. M

Rock-forming Minerals and Petrology.

Goldich (Samuel S.) & Kinser (James H.). *Perthite from Tory H Ontario.* Amer. Min., 1939, vol. 24, pp. 407–427, 12 figs.

Pegmatite masses occurring in syenite near Tory Hill, Halibur County, contain well-developed perthite, *d* 2·593, 57·7% albite, 42· microcline, displaying several textural varieties. The most striking these is 'braid perthite' in which albite spindles are developed para to the prism directions (110) and ($1\bar{1}0$) in the microcline. F. A. H

Kalinin (P. V.). *Hyalophane from the Slyudyanka river.* Compt. Re (Doklady) Acad. Sci. URSS, 1939, vol. 23, pp. 163–164, 1 fig.

Transparent bluish-grey crystals (*b c m z y x n o*) of felspar occur w crystals of diopside, scapolite, and blue apatite in phlogopite-cal veins in pyroxene-amphibole-gneiss in Transbaikalia, sp. gr. 2·7 α 1·534, β 1·538, γ 1·540, 2V 78°, negative. Analyses by Kalinin (Langwagen) gave SiO_2 59·85 (59·54), TiO_2 trace (—), Al_2O_3 2 (20·12), Fe_2O_3 — (0·17), FeO — (0·29), MgO 0·21 (0·04), CaO 0·86 (0· BaO 6·92 (5·75), K_2O 11·07 (10·95), Na_2O 0·93 (2·86), SO_3 n.d. (0· H_2O — 0·12 (0·10), H_2O — 0·12 (—), totals 100·82 (100·30), correspond to about 13% celsian. Spectroscopic analysis shows SrO about 0·5% L. J. S

LMQUIST (P. J.). *Von der chemischen Zusammensetzung der Kalifeldspate des Wiborger Rapakiwis und über die Deutung desselben.* Geol. För. Förh. Stockholm, 1939, vol. 61, pp. 157–167, 2 figs.

The following analyses are given of the potash-felspar occurring as s in the rapakivi-granite of the Viborg district: I, from balls not rounded by a shell of plagioclase; II and III, from those with the gioclase shell. The difference shown by these two types is discussed onnexion with the chemical composition and texture of the rock. A. **3**–499, **4**–40, **7**–186.]

SiO_2.	Al_2O_3.	Fe_2O_3.	MgO.	CaO.	Na_2O.	K_2O.	Total.	Sp.gr.	Or.	Ab.	An.
64·74	18·66	0·60	0·80	0·76	2·60	12·20	100·36	2·567	75·0	20·9	4·1
63·38	18·58	1·10	0·72	1·30	4·93	8·42	98·43	2·578	50·0	44·6	5·4
64·17	19·36	0·32	0·39	0·73	5·88	8·53	99·38	2·586	52·3	43·9	3·8

L. J. S.

GAKI (Yosiharu). *Über die bei der Hydrolyse der Plagioklase und einiger Karbonatmineralien nachgewiesene Wasserstoffion-Konzentration.* Mem. Coll. Sci. Kyoto Univ., Ser. B, 1938, vol. 14, pp. 141–154, 8 figs.

he hydrogen-ion concentration given by finely powdered minerals in distilled water at 25° C. was determined electrically. Albite, oligo-, andesine, labradorite, and anorthite (chemical analyses are given ch) show a regular increase of *p*H from 8·46 for albite to 9·78 for rthite. Various carbonates gave *p*H: calcite 9·65, aragonite 9·12, hsonite 3·86, malachite 5·83, cerussite 6·31, &c. L. J. S.

NASERI (Mario) & BENSA (Giuseppe). *Sulla cloromelanitite di Mocchie in Val di Susa.* Periodico Min. Roma, 1939, vol. 10, pp. 217–232, 1 pl.

his rock is composed mainly of green chloromelanite ($\gamma : c = 41°$, 7°, positive) with associated amphibole, zoisite, less clinozoisite and ote, little albite, and accessory apatite, sphene, rutile, magnetite, pyrite. Analysis of the rock gave SiO_2 51·80, TiO_2 0·30, ZrO_2 trace, $_3$ 7·50, Cr_2O_3 0·02, Fe_2O_3 6·52, FeO 2·59, NiO 0·03, MnO 0·16, MgO , BaO trace, CaO 15·20, Na_2O 5·92, K_2O 0·15, P_2O_5 1·95, S 0·07, 06, Cl 0·01, H_2O+ 0·15, H_2O- 0·05 = 100·52. L. J. S.

EY (C. E.). *Kyanite-gedrite parageneses.* Geol. Mag. London, 1939, vol. 76, pp. 326–330, 1 fig.

nalysis by H. C. G. Vincent of gedrite in kyanite-garnet-gedritite Terbeostrov, Shueretsky, Karelia, gave SiO_2 44·09, TiO_2 0·31, $_3$ 17·22, Fe_2O_3 1·87, FeO 15·02, MnO 0·14, MgO 17·12, CaO 0·51, O 1·24, K_2O trace, H_2O+ 2·03 = 99·55; sp. gr. 3·259, α 1·651,

γ 1·672, positive. This is compared with other gedrites rich in alumi and analyses of anthophyllite and gedrite are plotted on a triangu diagram $MgO-FeO-Al_2O_3$. L. J. S

Tilley (C. E.). *The status of hornblende in the low grade metamorp zones of green schists.* Geol. Mag. London, 1938, vol. 75, pp. 4 511, 3 figs.

An account is given of the hornblendes present in the green-schist the Scottish Highlands and the Start area in south Devon, and th origin discussed. The following new analyses by H. C. G. Vincent given of minerals isolated from the rocks of south Devon. I, Prochlo (2V small, positive) in chlorite-epidote-albite-schist at Limebury Po Salcombe Estuary. II, Hornblende, pale grey-green, fibrous, in ho blende-epidote-albite-schist at Prawle Point. III, Hornblende, v pale and finely fibrous, in hornblende-clinozoisite-albite-schist at Li bury Point. IV, Hornblende in hornblende-talc-chlorite-schist at Li bury Point. The last of these has been described as 'hydro-amphib [M.A. **6**-443]; the excess of water is attributed to admixed chlorit the material previously analysed.

	SiO_2.	TiO_2.	Al_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Na
I.	26·45	trace	20·88	2·82	21·06	0·44	16·84	0·16	0·
II.	54·33	0·29	2·68	1·09	11·68	nil	15·31	21·46	0·
III.	54·73	0·21	1·46	nil	9·60	0·16	17·94	12·76	1·
IV.	54·78	0·22	3·67	0·45	7·38	0·18	19·10	12·65	n

	K_2O.	H_2O+.	H_2O-.	Total.	Sp. gr.	α.	β.	γ.	γ:
I.	0·19	10·98	0·11	100·05	2·950	1·619	—	1·623	—
II.	0·12	2·04	0·20	100·74	3·11	1·627	1·641	1·650	20
III.	trace	2·27	trace	100·57	3·09	1·617	1·630	1·641	18
IV.	nil	2·39	0·09	100·91	3·06	1·618	1·629	1·638	17

L. J. S

Frohberg (M. H.). *Occurrence of riebeckite in the Michipicoten distr Ontario.* Amer. Min., 1939, vol. 24, pp. 382–387, 3 figs.

Idioblastic needles of deep-blue riebeckite are not an original con tuent of quartz veins in this district but have been locally introdu from lamprophyre dikes of which (together with hornblende, serpenti chlorite, and epidote) they are hydrothermal alteration products.

F. A. B

Suzuki (Jun). *A note on soda-amphiboles in crystalline schists f Hokkaidô.* Journ. Fac. Sci. Hokkaido Univ., Ser. 4, 1939, vol pp. 507–519, 6 figs.

Optical data are given of glaucophane, crossite, riebeckite, and cr

ite from siliceous and basic schists at contact with serpentine. These erals, together with aegirine-augite and albite, are due to the meta- atic action of sodium-rich solutions. Analysis by T. Nemoto of ucophane in garnet-bearing albite-glaucophane-quartz-schist from okanai pass, Isikari province, gave SiO_2 59·30, TiO_2 0·25, Al_2O_3 , Fe_2O_3 5·21, FeO 8·05, MnO 0·12, MgO 9·37, CaO 1·24, Na_2O 6·11,) 0·55, H_2O+ 1·42, H_2O- 0·32 = 100·60; optic axial plane (010), = 8–14°, 2V 10–15°, negative, n_1 1·652–1·663, n_2 1·659–1·667 (on vage flakes), α light yellowish-violet, β light violet, γ light ssian-blue. [M.A. **3**–198, **4**–402, **6**–125.] L. J. S.

ER (W. A.) & WAGER (L. R.). *Olivines from the Skaergaard intrusion, Kangerdlugssuak, east Greenland.* Amer. Min., 1939, vol. 24, pp. 18–25, 2 figs.

emical analyses, specific gravities, and optical data are given for olivines separated from the rocks. Based upon their study and ious work the authors propose the following classification of oli- following the molecular percentage of Fe_2SiO_4: forsterite (0–10), olite (10–30), hyalosiderite (30–50), hortonolite (50–70), ferro- onolite (70–90), fayalite (90–100%).

SiO_2.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Sp. gr.	α.	β.	γ.	2V.
38·11	0·15	31·48	0·22	30·50	0·02	3·69	1·710	1·733	1·748	79°
33·72	0·05	47·91	0·41	18·07	—	3·88	1·752	1·781	1·795	65
31·85	0·11	58·64	0·85	8·49	0·18	4·15	1·788	1·828	1·840	58
30·15	0·43	65·02	1·01	1·05	2·18	n.d.	1·827	1·869	1·879	48

also TiO_2 trace. II, TiO_2 trace. III, TiO_2 0·01, Al_2O_3 trace. IV, TiO_2 0·20, 0·07.

F. A. B.

REATTA (Ciro). *Giacimenti di granato almandino ai contatti del massiccio intrusivo di Cima d'Asta e loro paragenesi.* Stud. Trentini Sci. Nat., 1938, vol. 19, pp. 105–130, 2 pls.

lmandine in hornfels (cornubianite) with cordierite, tourmaline, &c., : I (also H_2O 0·16, alkalis, Cl, traces) from Val Regana; II (also) 0·22, K_2O 0·23, H_2O+ 1·92, H_2O- 0·26, Cl, S traces) from Monte bio, Trentino.

SiO_2.	TiO_2.	Al_2O_3.	Cr_2O_3.	Fe_2O_3.	FeO.	MnO.	MgO.	CaO.	Sp. gr.	n.
36·90	0·16	22·46	0·08	0·03	35·37	2·04	2·01	0·99	4·178	1·817
34·54	0·12	19·29	0·02	8·35	28·14	6·43	0·27	0·50	4·12	1·822

L. J. S.

Rosický (Vojtěch). *O výskytu turmalinu v horninách.* [On the oc rence of tourmaline in rocks.] Časopis Vlasteneckého Musej Spolku v Olomouci, 1937, vol. 50, pp. 13–23, 2 pls. (Czech German summary.)

The origin of tourmaline in granitic and other rocks from var localities in southern Bohemia and western Moravia is conside Lithium-bearing tourmaline is a syngenetic (primary) constituen aplite. Black tourmaline is concentrated around spots (1–4 cm.) of tite the rims of which have been resorbed. Secondary tourmaline oc in veinlets and in mica-schist. F.

Larsen (Esper S.) & Buie (Bennett Frank). *Potash analcime pseudoleucite from the Highwood Mountains of Montana.* A Min., 1938, vol. 23, pp. 837–849, 1 fig.

Chemical analyses are given of clear analcime phenocrysts (n 1· and of pseudoleucite phenocrysts (1 to 10 mm. across) from the bas rocks. The pseudoleucite phenocrysts yield two portions, 66% insol in acid consisting of potash-felspar (α 1·518, β 1·523, γ 1·525), an 'amorphous' material (n 1·500) near thomsonite which was perl derived from the hydration of nepheline. The analcime contai $4\frac{1}{2}\%$ K_2O is of primary origin and the pseudoleucite is believed to r from the unmixing of an analcime yet richer in potash. F. A.

Schairer (J. F.). *The origin of igneous rocks and their mineral co tuents.* Scientific Monthly (Amer. Assoc. Adv. Sci.), 1939, vol pp. 142–154, 11 figs.

A general account is given of the experimental work carried out i Geophysical Laboratory of the Carnegie Institution of Washingto L. J.

Wells (Roger C.). *Present trends in geochemistry.* Journ. Chem. Ed tion (Amer. Chem. Soc.), 1938, vol. 15, pp. 524–532, 11 fig portraits.

A review. Portraits of F. W. Clarke (1847–1931), W. F. Hilleb (1853–1925), and H. S. Washington (1867–1934). M. H.

Shepherd (E. S.). *The gases in rocks and some related problems.* A Journ. Sci., 1938, ser. 5, vol. 35A, pp. 311–351.

Several analyses are given of the gases collected at the lava la Kilauea and extracted from igneous rocks of various kinds. (

ailed chemical analyses are also given of the rocks from which gases re extracted.) The bulk of the volatile matter consists of water; er constituents are CO_2, CO, H, N, A, S, Cl, F. The analyses cannot, wever, be representative of the primary magmatic gases. L. J. S.

NI (K.) & HOSOKAWA (K.). *On the viscosities of silicate rock-forming minerals and igneous rocks.* Researches of the Electrotechnical Laboratory, [Tokyo, 1936,] no. 391, pp. i–vi (English), 1–105 (Japanese), 69 figs.

Besides the previously published data [M.A. **5**–509, **6**–455] this paper es the results of viscosity measurement for molten bronzite, phlogo-e, olivine, nepheline, carnegieite (artificial), jadeite (artificial), olivine-erite, andesite (six types), granodiorite, granite, obsidian, pitchstone, liparite from various Japanese localities. The viscosity of molten ks at a given temperature is shown to increase with the increasing entage of silica. The effect of addition of various oxides to basalt it has also been studied. The paper is published in Japanese but an glish synopsis and numerous tables and diagrams make it quite prehensive to a non-Japanese reader. S. I. T.

GREGOR (A. G.). *The term 'plagiophyre'.* Bull. Geol. Surv. Great Britain, 1939, no. 1, pp. 99–103.

he history of the use and misuse of this term invented in 1914 by W. Tyrrell is traced and suggestions are made regarding the future of the term as a group-name. W. C. S.

ERSON (J. G. C.) with MACGREGOR (M.). *The granites of Scotland.* Special reports on the mineral resources of Great Britain, Mem. Geol. Surv., 1939, vol. 32, 70 pp., 4 pls., 9 text-figs. Price 2*s.* 6*d.*

he general characters, mode of occurrence, methods of quarrying, , of granite are explained. Results are given of attrition, abrasive, pact, crushing, &c., tests. Details for each locality and quarry in tland are illustrated with maps. L. J. S.

RGE (Eleanor). *Crystallization of the Rockville granite.* Amer. Min., 1939, vol. 24, pp. 303–316, 8 figs.

he descriptions of the mineral constituents of a coarse-grained micro-e-biotite-hornblende-quartz-granite quarried near St. Cloud, Minne-a, are given in some detail and the history of crystallization of the k postulated. F. A. B.

Demay (André). *Sur les granites, microgranites et rhyolites de l'extrém est du massif de Guéret et particulièrement sur l'existence de tourmal dans certaines rhyolites.* Compt. Rend. Acad. Sci. Paris, 19 vol. 206, pp. 1905–1907.

Seven complete analyses of these rocks are given showing them to divisible into three groups, that have probably been derived from same magma but at different times and under somewhat differ conditions. One group of almost black rhyolites differs in composit and contains tourmaline and neogene biotite, due probably to me morphism caused by the granite. C. A. S

Lapparent (Jacques de). *La décomposition latéritique du granite d la région de Macenta (Guinée française).* Compt. Rend. Acad. Paris, 1939, vol. 208, pp. 1767–1769.

The bulk of the granite, consisting of oligoclase-andesine 43, mic cline 13, quartz 36, and black mica 8%, has undergone but slight alte tion, only part of the felspar having been changed to sericite, while sc has distintegrated. But elsewhere there has been much greater alte tion: in one area up to 18% has been altered to gibbsite, and elsewh kaolinite has formed with loss of mica and complete absence of gibbs This last alteration is probably due to the tropical climate. C. A. S

Lelubre (Maurice). *Sur le granite du Tefedest (Sahara central).* Con Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 352–353.

This granite which runs north from the main Hoggar mass, conta many enclaves—schistose, amphibolitic or true hornfels, and is versed by pegmatites with well-marked graphic structure. In pla crystalline limestone, quartzite, and amphibolite, metamorphosed the granite, occur, and also veins of aplite and pegmatite contain much microcline. Elsewhere the microscope shows the granite to alkalic, very rich in microcline, with many liquid inclusions in quartz, much magnetite, and some hudsonite. C. A. S

Larsen (Esper S.) & Switzer (George). *An obsidian-like rock for from the melting of a granodiorite.* Amer Journ. Sci., 1939, vol. 2 pp. 562–568, 3 pls.

The Cerro de la Calaveras near Carlsbad, San Diego Co., California a large andesite plug intruded into tonalite and Tertiary sedime In the andesite is a large (50 × 40 feet) inclusion of partly fused gra diorite, consisting of corroded phenocrysts of quartz and plagioclas

groundmass (40–50% of the rock) of black glass. Perthite has been corporated in the glass, and biotite and hornblende have been re-aced by diopside and iron-ore. The glass has sp. gr. 2·40, n 1·497, and alysis gave SiO_2 71·29, TiO_2 0·29, Al_2O_3 12·69, Fe_2O_3 1·22, FeO 0·69, gO 0·41, CaO 0·77, Na_2O 4·19, K_2O 3·54, H_2O 4·57 = 99·66, as com-red with SiO_2 69·26, H_2O 0·42, &c., for the tonalite. The addition of ater was evidently necessary to bring about the fusion of the rock.

L. J. S.

IIKA-BUDESTI (St.). *Le caractère pétrographique de la série éruptive du Jebel Sarro. Antiatlas marocain.* Compt. Rend. Acad. Sci. Paris, 1938, vol. 207, 1056–1058.

The rocks of this series are granodiorite. They have the character of e charnockite of India and the mangerite of Norway, save that they ntain no hypersthene; the potash-felspar is always microperthite, d the melanocratic element a pyroxene, as a rule diallage. Several oximate and two complete analyses are given. C. A. S.

NDALE-BISCOE (R.). *Notes on a monzonitic complex and associated rocks in the Gwanda district, Southern Rhodesia.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), pp. 83–102, 6 pl., 2 text-figs.

The Colleen Bawn complex, 13½ sq. miles in area, is situated at the st end of the Gwanda gold belt invading schists and consists of ada-ellite, monzonite, hypersthene-monzonite, and olivine-monzonite. embers of the schist series are epidiorite, amphibolite, quartzite, uded ironstone, siliceous schist, and serpentine. Crystalline limestone o occurs in the area but does not behave like a sedimentary rock. riferous quartz-veins occur too. E. D. M.

LIANKIN (D. S.). *To the characteristics of the breccia-like and banded lavas of the volcano Elbrouz.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1938, vol. 21, pp. 249–254, 1 fig.

The dacite lavas of Elbrus (Caucasus) show brecciated and banded ucture. The analyses of the two varieties of lava, black and red, ow no appreciable difference in their composition, except for the gher amount of Fe_2O_3 in the red variety, which is richer in haematite. stobalite, sometimes pseudomorphous after tridymite, is found in ese lavas. The structure of the lava is attributed to autobrecciation ring flow. S. I. T.

Lacroix (Alfred). *Les ponces dacitiques flottant sur l'ocean, entre les Fi les Nouvelles-Hébrides et la Nouvelle-Calédonie.* Compt. Rend. Aca Sci. Paris, 1939, vol. 208, pp. 853–857.

This pumice, found at about 179° W., 16° S., is an andesitic dacit containing a few small phenocrysts of zoned plagioclase (53–75 anorthite) and pigeonite in a brownish vesicular glass in which are lo microlites of plagioclase and pyroxene. Analysis shows its composition be identical with that of pumice from Aniwa island, New Hebrides, so 250 miles to the west, whence it appears to have come. C. A. S.

Beliankin (D. S.), Petrov (V. P.), & Petrov (R. P.). *First nephel syenite in Transcaucasia.* Compt. Rend. (Doklady) Acad. S URSS, 1938, vol. 19, pp. 73–76, 1 fig.

An intrusion of nepheline-syenite of Tertiary age has been discover at Ker-Ogly, NW. of Erivan in Armenia. It is mainly composed anorthoclase (67·8 %) and nepheline (10·2 %), with thomsonite, serici plagioclase (andesine zoned to oligoclase), amphibole, pyroxene, a magnetite. Analyses of rocks and minerals are given. S. I. T

[Kupletsky (B. M.) & Litvin (M. A.)] Куплетский (Б. М.) и Литв (М. А.). О некоторых щелочных породах западной Монголии Kupletsky (B. M.) & Litwin (M. A.). *On some alkaline rocks western Mongolia.* Труд. Монгольской Комиссии, Акад. На СССР [Trans. Mongolian Commission, Acad. Sci. USSR], 1937, 32, 24 pp., 2 pl. (Russian with English summary.]

Some of the alkalic igneous rocks from the region of the lakes Kos gol, Ubsu, and Karasu in western Mongolia are described. They co prise nepheline-syenite, riebeckite-granite, and two dike rocks. The d rock from the region south of Ubsu is a biotite-gabbro-peridoti Analysis by K. Sokolov gave SiO_2 32·85, TiO_2 4·26, Al_2O_3 9·93, Fe_2 10·83, FeO 16·89, MnO 0·24, MgO 14·15, CaO 2·42, Na_2O 1·59, K_2O 1· P_2O_5 0·23, H_2O- 1·24, ign. 4·37 = 100·18. It is composed of bioti olivine, labradorite, hornblende, chlorite, apatite, and iron-ore. Intrus basalt and other rocks are also described. S. I. T

Iwao (Shuichi). *Petrology of the alkaline rocks of the Nayosi distr Sakhalin, Japan.* Japanese Journ. Geol. Geogr., 1939, vol. pp. 155–204, 28 figs.

Detailed descriptions are given of the microscopic characters trachybasalts, trachydolerites, monzonites, and syenites belonging

e Cainozoic alkalic rocks of the circum-Japan Sea province [M.A. 299]. Many optical determinations are given for the constituent nerals, including arfvedsonite with optical anomalies. L. J. S.

RTRIDGE (F. C.). *A poikilitic sodalite syenite from Pilansberg.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), pp. 173–174.

The first sodalite-rich syenite found in South Africa is described, and erence is made to its fluorescence in ultra-violet light. E. D. M.

CROIX (Alfred). *Sur la production de basalte et d'océanite au cours d'une éruption du volcan actif (Piton de la Fournaise) de l'île de la Réunion (7 décembre 1938–11 janvier 1939).* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 405–408.

— *Conséquences à tirer d'observations sur l'éruption récente du volcan de la Réunion.* Ibid., pp. 421–423.

an account of the eruption is given with complete and proximate alyses of six specimens of the lava emitted at various stages of the ption, showing them to be labradoritic basalts poor in olivine and anites. In this eruption of first basalt and then oceanite it is suggested t olivine had crystallized out and sunk to the lower part of the ervoir, and that it may or may not have been remelted before rusion. C. A. S.

ANKEL (J. J.). *Studies on Karroo dolerites. 1. Notes on a Karroo dolerite sill at Aliwal North.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), pp. 103–108, 1 pl., 1 text-fig.

A 20-foot sill is described and its mode of emplacement suggested. vine percentage increases downwards. Quartz-veins in the sandstone ow colloidal banding. E. D. M.

ÖGER (W. E.). *Über Theralith und Monchiquit.* Zentr. Min., Abt. A, 1939, pp. 80–94, 2 figs.

The rock from Duppau near Karlsbad in Sudetenland, hitherto arded as the type of theralite, is shown to be generally so rich in ali-felspar as to be classified as essexite rather than theralite. The mposition of the groundmass of the monchiquite from Caldas de nchique, Portugal, calculated from the published analysis is shown correspond to a mixture of nepheline and medium basic plagioclase, d not to analcime. W. C. S.

[Soustov (N. I.)] Соустов (Н. И.). Геолого-петрографический оче восточных предгорий Чуна-тундры на Кольском полуострове. —Soustov (N. I.). *Geologo-petrographic survey of the eastern foothi of Chuna-tundra on the Kola peninsula.* Труд. Инст. Геол. Нау Вып. II, Петр. Сер. 1 [Trans. Inst. Geol. Sci., Petr. Ser. 1], n. [1938 ?], no. 2, pp. 1–31, 19 figs. (Russian with English summar

A petrographical description of the rocks of Chuna tundra is giv and three chemical analyses of rocks are included. The rocks describ are pre-Cambrian gneisses, schists, migmatites and the intrusive grani gabbro, pyroxenite, peridotite, and diabase. Inclusions of metamorph rocks resembling beerbachite are found in the gabbro. [M.A. **6**–311.]

S. I. T.

[Kupletsky (B. M.)] Куплетский (Б. М.). Химико-петрографическ характеристика пироксенитовой интрузии у ст. Африканда Кольском полуострове.—Kupletsky (B. M.). *Chemico-petrograp characteristics of the pyroxenyte intrusions of Afrikanda station the Kola peninsula.* Труд. Инст. Геол. Наук, Вып. II, Петр. Сер [Trans. Inst. Geol. Sci., Petr. Ser. 1], n. d. [1938 ?], no. 2, pp. 33– 1 fig. (Russian with English summary.)

The banded ultrabasic intrusion of Afrikanda [M.A. **7**–53, 301] accompanied by an eruptive breccia composed of large blocks of o olivinite. This suggests that ore-olivinite is an early product of diff entiation. On the other hand, the late product of differentiatic nepheline-pegmatite, forms hybrids with pyroxenite. In addition to t previously published analyses, an analysis of melilite-olivinite by P. Volkova is given: SiO_2 13·84, TiO_2 30·12, Al_2O_3 1·67, Fe_2O_3 9·58, F 6·61, MgO 14·82, CaO 21·26, Na_2O 0·72, K_2O 0·11, P_2O_5 and CO_2 0·(H_2O 1·43 = 100·25. The calculated average composition of the roc of the Afrikanda complex shows high CaO and low SiO_2 and Al_2O_3, a it is similar to that of jacupirangite. This, together with the abunda of lime-rich minerals, suggests an assimilation of carbonate rocks by ultrabasic magma.

S. I. T.

[Eliseev (N. A.), Ozhinsky (I. S.), & Volodin (E. N.)] Елисеев (Н. А Ожинский (И. С.) и Володин (Е. Н.). Геологическая кар Хибинских тундр.—Eliseev (N. A.), Oginsky (J. S.), & Volo (E. N.). *Geological map of the Khibine tundra.* Труд. Ленин Геолог. Управл., Вып. 19 [Trans. Leningrad Geol. Service], 19 no. 19, 68 pp., 12 figs., 2 maps. (Russian with English summar

Two maps—one geological, the other structural—are accompanied by text giving a summary of the petrography and structural features the Khibina tundra magmatic compex. The sequence of in-sion of various rock-types is discussed and a comparison is made th other ring-dike and cone-sheet structural forms. [M.A. 7–196.]

S. I. T.

ELYANKIN (D. S.), EREMEEV (V. P.), & PETROV (V. P.)] Белянкин (Д. С.), Еремеев (В. П.) и Петров (В. П.). Новые данные по неоинтрузиям в бассейне р. Уруха (центральный Кавказ).—[*New data on neointrusions in the basin of the river Uruch* (*central Caucasus*).] Труд. Инст. Геол. Наук, Вып. IV, Петр. Сек. 3 [Trans. Inst. Geol. Sci., Petr. Sect., 3], n.d. [1938 ?], no. 4, 31 pp., 22 figs. (Russian with English summary.)

The study of a granodiorite intrusion in the basin of Urukh, central ucasus, shows that the potash-felspar is mainly anorthoclase (2V 60°, α 1·520, γ 1·525). In the contact-altered igneous rocks oligoclase d microcline are partly transformed into anorthoclase and anti-thite. Contact-altered diabase and porphyrite dikes are transformed o albite-kersantite, while the sedimentary rocks are transformed into rdierite-hornfels. S. I. T.

AKONOVA-SAVELIEVA (E. N.)] Дьяконова-Савельева (Е. Н.). К петрографии Уссурийского края. -DJAKONOVA-SAVELJEVA (E. N.). *On petrography of the Ussuri region.* Труд. Петр. Инст. Акад. Наук СССР (Trav. Inst. Pétrogr. Acad. Sci. URSS), 1934, no. 6, pp. 265–282, 2 pls., 5 text-figs. (Russian with English summary.)

Quaternary basalts and dolerites and Mesozoic granites of the upper ches of Tudagou river, Far East district of Siberia, are described d a number of analyses are given. S. I. T.

APASTAMATIOU (Jean). *Sur quelques nouveaux types de roches à corindon de l'île de Naxos* (*Archipel Grec*). Compt. Rend. Acad. Sci. Paris, 1939, vol. 208, pp. 2088–2090.

Corundum rocks occur at Aganias, some 2 km. N. of Kynidaros in axos: I, kyshtymite, composed of plagioclase (An 95–100) 67·81, rundum 25·54, margarite 6·40, and tourmaline 0·25; II, the same, t pegmatitic, and containing more tourmaline; and III, *naxite*, com-sed of phlogopite 60, corundum 33, and plagioclase 7, with a little ue tourmaline. This last somewhat resembles marundite and is of

pneumatolytic origin. Analyses of I (and III) gave SiO_2 34·58 (34·3 TiO_2 trace (trace), Al_2O_3 47·29 (36·46), Fe_2O_3 0·33 (0·23), FeO 1· (5·94), MnO trace (0·07), MgO 0·82 (10·07), CaO 13·42 (1·92), Na_2O 0· (2·70), K_2O 0·55 (5·55), H_2O+ 1·41 (2·21), H_2O- 0·23 (0·10), Cl 0· (0·05), F 0·04 (0·76), P_2O_5 trace (trace), totals 100·37 (100·38).

C. A. S.

Faessler (Carl). *The stock of "suzorite" in Suzor township, Queb* Univ. Toronto Studies, Geol. Ser., 1939, no. 42, pp. 47–52.

The coarse-grained rock forms an elliptical outcrop, probably volcanic vent, in gneiss, and consists of biotite (60–80%), red orthocla (13), greenish augite (11), colourless apatite (10), with some calcite a a few grains of sphene, quartz, plagioclase, magnetite, and pyri Analysis of material from the centre of the intrusion gave SiO_2 39·9 TiO_2 2·82, Al_2O_3 11·20, Fe_2O_3 1·46, FeO 3·92, MnO 0·13, MgO 10·6 CaO 12·25, Na_2O 1·31, K_2O 6·28, P_2O_5 5·57, CO_2 1·91, SO_3 0·45, S 0·2 H_2O 1·82 = 99·96. Analysis of material from near the border sho SiO_2 42·44, &c. The rock differs from 'glimmerite' in containing mu felspar and apatite, and it is perhaps a hybrid. L. J. S.

Hess (Harry H.). *World distribution of serpentinized peridotites and geologic significance.* Amer. Min., 1939, vol. 24, pp. 275–276.

Abstract of a general review. F. A. B.

Sosman (Robert B.). *Evidence on the intrusion-temperature of peridotit* Amer. Journ. Sci., 1938, vol. 35A, pp. 353–359.

A peridotite dike invading coal seams in the Gates mine, Fayette C Pennsylvania, contains fragments of coal. Comparative analyses a coking tests of this material and of the unaltered coal suggest that t temperature of the peridotite magma did not exceed 550° C. Yet t melting-point of a dry melt in the laboratory would be about 1090°

L. J. S.

Lacroix (Alfred). *Sur un nouveau type de roches métamorphiq (sakénites) faisant partie des schistes cristallins du sud de Madagasc* Compt. Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 609–612.

The sakenites occur at Sakeny, Ihosy, Madagascar, as a series of be up to 10 m. thick, and in one case extending over 6 km., in paragneis containing much aluminous mineral (sillimanite, cordierite, almandi &c.) and associated with pyroxenites and amphibolites. They a

itish, hard, saccharoidal rocks, the predominant constituent being orthite or a near plagioclase, associated with very aluminous minerals sapphirine and/or spinel, and with the latter sometimes corundum and spore. Occasionally the rock consists of anorthite with practically ly corundum, which sometimes even may predominate over the orthite; elsewhere it may consist almost solely of anorthite. The rious types, though when contrasted apparently quite different, shade o one another with no definite line of separation. C. A. S.

URIN (Edmond). *Les séries cristallophylliennes du centre-Annam méridional.* Compt. Rend. Acad. Sci. Paris, 1939, vol. 208, pp. 1737–1739.

The lowest member of the series is a biotite-schist, with eruptive phibolites, next to which are mica-schists with either two micas, or ly muscovite with sillimanite and garnet and occasionally graphite ulting from metamorphism of carbonaceous argillaceous slates. All ve been penetrated by dikes of aplite, pegmatite, diorite, gabbro, lesite, or basalt. All again have been intersected by massifs of gneissic nite usually containing two micas and albite. Lastly, towards the thern portion of the area, occur metamorphosed labradorite-andesite d quartzite containing tourmaline. C. A. S.

L (Louis T.), JACOBS (H.), ALLAN (J. T.), & BOZZOLI (G. R.). "*Wonderstone.*" Bull. Geol. Surv. South Africa, 1937, no. 8, 44 pp., 1 map, 5 pls., 3 text-figs. Price 6*d.*

The rock described consists of a metamorphosed slaty tuff interided with soda-rhyolite of Ventersdorp or Witwatersrand age. It sists essentially of pyrophyllite, chloritoid or epidote, and rutile. Nine alyses given show little variation. Ease of working and its physical perties render it particularly suitable for certain structural purposes, ornamental work, and possibly in electrical work. It is quarried near osdal, Lichtenburg district, Transvaal. E. D. M.

UTWEIN (Friedrich). *Über das Vorkommen einiger seltener Elemente in metamorphen Gesteinen des Schwarzwaldes. Vorläufige Mitteilung.* Zentr. Min., Abt. A, 1939, pp. 123–128.

Spectroscopic analysis of amphibolite, &c., showed Pt, Pd, Au, each out 0·1–0·2 gram per ton; V (0·001–0·01 %) in graphitoid gneiss.

L. J. S.

Stewart (Duncan, *Jr.*). *Petrography of some South Victoria Land roci* Amer. Min., 1939, vol. 24, pp. 155–161, 1 fig.

The percentages of minerals present in thin sections of fifteen igneo and four metamorphic rocks are tabulated, and comparisons ma between them and those rocks examined from other Antarctic regio F. A. B.

Rivière (A.). *Sur la dolomitisation des sédiments calcaires.* Comp Rend. Acad. Sci. Paris, 1939, vol. 209, pp. 597–599.

The fact that the *p*H of sea-water in contact with $CaCO_3$ decreases, also the 'alkaline reserve', i.e. the total Ca and Mg present in solution carbonate or bicarbonate, is not explicable as merely due to separati of $CaCO_3$ on crystalline nuclei from a supersaturated solution. Expe ments are described suggesting that the true explanation is based the fact that $CaCO_3$ in contact with sea-water extracts therefrom so of the Mg as $MgCO_3$, partially transforming the $CaCO_3$ to $MgCa(CO_3$ Pure chalk left in contact with sea-water for 11 months contained 8 of dolomite. C. A. S.

Rivière (A.). *Observations nouvelles sur le mécanisme de dolomitisati des sédiments calcaires.* Compt. Rend. Acad. Sci. Paris, 1939, v 209, pp. 691–692.

Sea-water left in contact with $CaCO_3$ loses much more Mg than deduced from decrease in 'alkaline reserve', especially if the *p*H maintained at a high level, as by removal of CO_2. Any action tendi to raise the *p*H, e.g. circulation or disturbance of the sea by wind or tic or removal of CO_2 by photosynthetic action, increases the effect. Th explains the almost total absence of dolomitization in an undisturb area, its large amount (up to 17 %) in some calcareous sands of t Bahamas, in some dead corals, and in some extremely dolomitized (to 30–40 %) reefs in the Dead Sea. C. A. S.

Thomson (Jas. E.). *Vesicular carbonaceous sediments in Lake of t Woods region.* Univ. Toronto Studies, Geol. Ser., 1939, no. 4 pp. 141–148, 2 pls.

At several places in this region in Ontario, sedimentary rocks, int bedded with sheared Keewatin (pre-Cambrian) lavas, consist of bla chert and banded ironstone with bands of vesicular graphitic che Analyses of the latter show 1·38–8·24 % C. The graphite is evident of organic origin, and the vesicles may be due to the decay of orga matter or to the action of the overlying lava flow. L. J. S.

RTRIDGE (F. C.). *Note on the Durban beach sands.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), p. 175.

The composition of a heavy residue is given, with 84 % ilmenite.

E. D. M.

HITE (W. A.). *The mineralogy of desert sands.* Amer. Journ. Sci., 1939, vol. 237, pp. 742–747, 2 figs.

In 33 samples of sands, from Rajputana, South Australia, Libyan sert, S.W. Africa, and western U.S.A., 41 minerals were identified in heavy and 4 in the light fractions. Heavy minerals are here less quent than in water-borne sands, and less frequent in the larger than the smaller desert areas. Calcite was found in all samples except one, apatite mostly in the smaller desert areas. L. J. S.

LLAIR (Pierre). *Les éléments lourds dans les sables désertiques.* Compt. Rend. Acad. Sci. Paris, 1938, vol. 207, pp. 1054–1056.

The heavy portions of sands collected (I) west, and (II) east of the ggar-Laghouat ridge, Sahara, were examined. (I) contained very ndant zircons, with some muscovite, a little brookite, anatase, and le, in places a good deal of tourmaline and always much magnetite, ficating a probable derivation from eruptive rocks. In (II) zircon is optional, magnetite rare, muscovite abundant, rutile, rose garnet, urolite, tourmaline, and sphene occasional. C. A. S.

UNG (John A., *Jr.*). *Minerals from deep sea cores and surface deposits of Bermudian calcareous sediments.* Amer. Journ. Sci., 1939, vol. 237, pp. 798–810, 2 figs.

ores 1–3 feet long from depths of 1320–3338 metres consist mainly $CaCO_3$ with up to 4·44 % $MgCO_3$ and < 1 % insoluble. The heavy neral separations contain a variety of minerals, some of which were doubt derived from the volcanic rocks underlying Bermuda. Glauco- e, phillipsite, and iron oxides are authigenic. Quartz and some other eign minerals may have been transported by dust-storms, birds, or rgasso weed. L. J. S.

Miscellaneous.

TUS (Albert C.). *Silica and silicate solubilities.* Journ. Indust. Hygiene, 1937, vol. 19, pp. 138–145.

HITEHOUSE (A. G. R.). *The excretion of silica in urine after oral administration of silica and silicate dusts and the solubility of silica*

and silicate dusts in acid and alkaline solutions at 37° C. Ibi pp. 590–597.

The quantity of silica dissolved from quartz, sericite, flint, and seve rocks by water and other solvents has been studied. M. H. H.

De Leenheer (L.). *Sur la trieuite et les minéraux associés.* Ann. Serv Mines, Katanga, 1938, vol. 3 (for 1937), pp. 3–13, 1 pl., 3 text-fi

Details previously given for trieuite [M.A. **6**–152] are repeated. Sp. 3·128, H. $3\frac{1}{2}$. Thin flakes are brown with n 1·85. Dehydration curv show a uniform loss up to 900°, with a break at 300° corresponding loss of oxygen. Melting-point 1010°. X-ray photographs confirm th the material is colloidal. New material, also from the Étoile du Con mine, contains CuO 20–25, Co_2O_3 50–55 %, and is intimately associat with malachite and chrysocolla on sandstone. L. J. S.

De Leenheer (L.). *Sur la stainiérite.* Ann. Service Mines, Katang 1936, vol. 6 (for 1935), pp. 35–50, 1 pl., 11 text-figs.

The analysis and description previously given [M.A. **6**–152] was impure material. Pure material consisting of botryoidal crusts band with haematite from Mindigi, Katanga, is anisotropic and pleochroic reflected light, and gave Co_2O_3 84·60, CuO 3·46, H_2O 11·15 = 99·2 corresponding with $13Co_2O_3.1CuO.15H_2O$, or, as copper is variab $8(Co_2O_3,CuO).9H_2O$. The dehydration curve shows a loss of 12 % 300° and 20 % at 1000°. L. J. S.

[Chirva (E. F.)] Чирва (Е. Ф.). Вокеленит из Березовского рудни на Урале. [*Vauquelinite from Berezovsk mines in Ural.*] Учен. За Ленинград. Госуд. Унив., Сер. Геол. (Annals Leningrad Sta Univ., Ser. Geol.), 1935, vol. 1, pp. 19–35, 3 figs.

Goniometric measurement of crystals of vauquelinite showed fourte forms, c (001), d (011), y ($\bar{1}23$), e (101), x (302), h ($\bar{2}01$), p ($\bar{3}02$), b (01 f (110), m (210), s (810), ϕ (772), (13.5.2), and (52.11.10), and gave t axial ratios $a:b:c = 0{\cdot}74836:1:1{\cdot}41882$, $\beta = 69° 50'$. From the follo ing new analyses the formula is deduced as $n[3(Pb,Cu)O.(P_2O_5)_2]$ $m[(Pb,Cu)O.2CrO_3]$.

CrO_3.	P_2O_5.	PbO.	CuO.	Fe_2O_3.	ign. loss.	Total.
26·79	—	61·09	11·91	—	—	'99·94'
21·46	3·55	62·59	12·19	0·70	—	100·49
17·44	8·66	62·06	10·31	0·50	1·12	100·09

L. J. S.

HIRVA (E. F.) & SHAFRANOVSKY (I. I.)] Чирва (Е. Ф.) и Шафрановский (И. И.). Везувианы из Ахматовской копи на южном урале. —CHIRVA (E. F.) and SHAFRANOVSKY (I. I.). *The vesuvians of the Achamatovsk* [sic] *mine in the Urals.* Учен. Зап. Ленинград. Госуд. Унив., Сер. Геол. (Annals Leningrad State Univ., Ser. Geol.), 1936, vol. 2, pp. 18–52, 9 figs. (Russian with English summary.)

Green to brown idocrase crystals of prismatic habit from chloritelist and granular limestone from Akhmatovsk mine, Zlatoust, showed crystal-forms and gave $a:c = 1:0{\cdot}537224$. Crystals of bipyramidal habit from garnet-idocrase-rock and chlorite-schist showed 46 forms and gave $a:c = 1:0{\cdot}537284$. New forms are (401), (443), (232), (521).

L. J. S.

SEDEV (A.). *On lead-bearing turmaline from the Maly Khingan.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1937, vol. 14, pp. 127–128.

Tourmaline from a tourmaline-granite of Maly Khingan, eastern Siberia, on analysis by V. A. Smirnov, gave SiO_2 35·96, TiO_2 0·58, Al_2O_3 33·48, Fe_2O_3 7·01, FeO 6·63, MnO 0·21, MgO 0·33, CaO 0·48, Na_2O 1·46, K_2O 0·06, B_2O_3 8·48, PbS 1·25, F 0·74, H_2O+ 2·84, H_2O- 0·, other elements 0·35 = 100·06. Its optical properties are ω 1·655, 633, pleochroism ω dark brown, ϵ pale brown with a yellowish tinge.

S. I. T.

AKHARIA (G. V.) Гвахария (Г. В.). *Datolite from the Soganlug talus in the neighbourhood of the town of Tbilissi.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 24, pp. 162–165, 4 figs.

Four types of crystals of datolite from near Tiflis are distinguished. Prismatic habit in geodes in tuffs, with earlier leonhardite, mesolite, and thomsonite. (2) Equidimensional, slightly yellowish crystals in odes in andesite-basalt, with earlier delessite, prehnite, chalcedony or cite, followed by later prehnite and colourless datolite of the third oe. (3) Tabular habit on x. (4) Elongated along the b-axis, in geodes the andesite-basalt and tuff contact, with earlier quartz, delessite, cite, and prehnite and later specular haematite. Crystal-forms, 28 in mber, include new T (250), A' ($\bar{1}43$), A (984), R' (184), S' (344) oldschmid's orientation, $a:b:c = 0{\cdot}6329:1:0{\cdot}6345$, $\beta = 89°\ 51']$. alysis of large crystals from the andesite-basalt gave SiO_2 36·94, O_3 21·15, Al_2O_3 0·31, Fe_2O_3 0·09, MnO 0·02, MgO nil, CaO 35·17, $_2O$ trace, K_2O trace, $H_2O(<110°)$ 0·10, $H_2O(>110°)$ 6·06 = 99·84. tical data α' 1·626, γ' 1·686, 2V 72°, $\gamma:c = 3°$.

L. J. S.

Shkabara (M. N.) & Sturm (E. A.) Шкабара (М. Н.) и Штурм (Е. А
Datolite from the volcanic group of the Karadag in the Crim
Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 24, pp. 1
170, 4 figs.

At 'Andesite mound' violet-coloured datolite (anal. I) occurs
geodes and fissures in andesite, with earlier calcite, quartz, deless
and analcime, and a later second generation of calcite. At Karag
range crystals of two types: prismatic (anal. II), attached at one
of the *c*-axis, in fissures in andesite with earlier calcite, pyrite,
thomsonite; barrel-shaped (anal. III) in andesite tuffs. Crystal-for
37 in number, include new *к* ($\bar{1}41$), *г* (139), *p* (141), *л* ($\bar{4}73$), *м* ($\bar{7}$
н ($\bar{1}3.5.5$), *з* ($\bar{7}13$) [Goldschmidt's orientation]. Datolite is of l
hydrothermal formation than the associated zeolites.

	SiO_2.	B_2O_3.	$Al_2O_3+Fe_2O_3$.	MgO.	CaO.	H_2O.	Total.	Sp.
I.	36·83	21·66	0·45	0·19	35·52	6·12	100·77	–
II.	37·08	21·51	0·29	0·17	35·41	6·00	'100·56'	2·
III.	37·55	21·50	0·33	0·26	35·39	5·86	100·89	–

L. J. S

Astashenko (K. I.) & Moleva (V. A.). *Zunyite and zunyite rock*
Karabas. Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol.
pp. 327–330, 2 figs.

Colourless tetrahedra (0·01–1·0 mm.) of zunyite, embedded in a gr
cement of mimetite, anglesite, &c., occur in a vein in secondary quart
derived from granodiorite-porphyries, near Lake Balkhash in Kaza
stan. They are isotropic or birefringent (0·002), *n* 1·590–1·594. Anal
gave SiO_2 25·53, TiO_2 0·62, Al_2O_3 57·42, Fe_2O_3 0·10, MnO trace, M
0·03, CaO 0·10, SrO 0·001, Na_2O 0·17, K_2O 0·11, P_2O_5 0·56, Cl 2
F 5·52, H_2O+ 10·03, H_2O- 0·12, total '102·85', sp. gr. 2·894.

L. J. S

Beliankin (D. S.) & Petrov (V. P.) Белянкин (Д. С.) и Петров (В.
Hibschite in Georgia. Compt. Rend. (Doklady) Acad. Sci. UR
1939, vol. 24, pp. 349–352, 2 figs.

The contact-rock between chalk marl and teschenite at Nikortzmi
in western Georgia, consists mainly of fine-grained wollastonite (α' 1·
γ' 1·624, 2V 39½°) altering to xonotlite (α' 1·576, γ' 1·592) with thom
ite and poikilitic hibschite (n_{Na} 1·681, *d* 3·06). The hibschite cont
cores of yellowish-green garnet (*n* 1·815 in the centre and *n* 1·810 at
margin). F. Cornu's analysis of the original hibschite is recalcul
deducting garnet. L. J.

TMAN (J. D.). *Some anomalies in the properties of cassiterite.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 23, pp. 470–472.

assiterite from various Siberian localities often shows a zonal ucture with optical anomalies; ω_{Na} 1·989–2·013; and in one grain 0–38°. L. J. S.

UKHROV (F. V.). *New data on linarite in ore-deposits of Kazakhstan.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 22, pp. 257–258.

inarite has been previously known from three localities in Kazakhn. Four other localities are now recorded, three in the steppe region one in southern Altai. Material from Krestovozdviyensk, Dzhezgan, Karaganda province, gave SO_3 20·70, PbO 47·15, CuO 26·43, O 5·00, insol. 1·22 = 100·50. It alters to antlerite [M.A. **7**–215], and ociated minerals are beaverite, atacamite, and chrysocolla.

L. J. S.

AFONOVA (T. N.) & ISKÜLL (E. W.). *Identity of the Inder ascharite and camsellite.* Compt. Rend. (Doklady) Acad. Sci. URSS, 1939, vol. 22, pp. 325–326.

he so-called ascharite [β-ascharite, M.A. **7**–122] from Inder, Kazakhn, differs from the original ascharite from Stassfurt, Germany, and hows the same lines in the X-ray powder photograph as given by W. Gruner for camsellite from British Columbia [M.A. **5**–201]. The mposition ($2MgO.B_2O_3.H_2O$), sp. gr. (2·6), and refractive indices ·575, γ 1·649) are also the same as for camsellite. L. J. S.

LEY (C. E.). *The identity of molengraaffite with lamprophyllite.* Trans. Geol. Soc. South Africa, 1939, vol. 41 (for 1938), pp. 109–111.

Iolengraaffite (of H. A. Brouwer, 1910) in aegirine-lujaurite from nsberg, Bushveld, contains much strontium (partial analysis by C. G. Vincent: SiO_2 29·4, TiO_2,Al_2O_3,Fe_2O_3, &c. 38·5, CaO 1·9, 14·4, BaO 1·8) and has sp. gr. 3·54, α 1·745, γ 1·780, $\alpha = b$, = 8–10°, 2V small, positive, proving its identity with lamprophyllite n Kola [M.A. **5**–34]. The same mineral also occurs in foyaite from nsberg; together with lovchorrite [M.A. **6**–341] as brown resinous udomorphs partly isotropic (n 1·653) and partly birefringent positive.

L. J. S.

Blattmann (S.). *Nigrin aus der Umrahmung des Fahrenberg bei Vohstrauß (Oberpfalz).* Zentr. Min., Abt. A, 1939, pp. 28–31, 2 figs.

Black grains of nigrine are abundant in the sands and gravel streams from the Fahrenberg in Bavaria. A partial analysis gave T 56·93, SiO_2 (quartz) 3·87, Fe 27·34, Mn 1·49, sp. gr. 4·5. X-ray pow photographs show the lines of both rutile and ilmenite; and a t section shows opaque ilmenite enclosed as regular intergrowths in yell transparent rutile. L. J. S

Himmel (Hans) & Schroeder (Robert). *Kristallographische Unsuchung an saarländischen Mineralien. VII. Lepidokrokit.* Zei Min., Abt. A, 1939, pp. 97–98, 1 fig.

Tufts of needles with pyrite and marcasite in calcite and dolom veins in sandstone, from the Frankenholz mine near Neunkirchen, g goniometric measurements agreeing with the axial ratios $a:b:c$ 0·308:1:0·246 deduced from X-ray measurements by J. Böhm [M **4**–29] for lepidocrocite or γ-FeOOH, rather than with those of goeth Forms present are y (110), u (101), n (121). L. J. S

Meixner (Heinz). *Einige Ferrisulfate (Slavikit, Copiapit und Fibrofer von Pöham in Salzburg.* Zentr. Min., Abt. A, 1939, pp. 110–11

Encrustations from weathered pyrite on Werfen schists consist slavikite (rhombohedral, ω 1·537, ϵ 1·498, Fe_2O_3 21·4 %) [M.A. **3**–3 copiapite, and fibroferrite (optic axial plane and γ parallel to c-a β 1·537, γ 1·572). L. J. S

Iimori (Takeo). *A beryllium-bearing variety of allanite.* Sci. Papers I Phys. Chem. Res. Tokyo, 1939, vol. 36, pp. 53–55.

Massive allanite with black colour, pitchy lustre, and greenish-g streak occurs in felspar at Iisaka, Fukushima prefecture, together w prismatic crystals of ordinary allanite. Analysis gave SiO_2 30·58, r earths 23·94, UO_3 trace, ThO_2 0·26, ZrO_2 0·57, Al_2O_3 12·71, Fe_2O_3 5 FeO 10·81, MnO 2·05, BeO 2·49, CaO 8·20, H_2O+ 3·33 = 100·68. slightly weathered brownish portion, separated magnetically (being m weakly magnetic), contains BeO 5·1 %. L. J. S

Hata (Shin). *Studies on allanite from the Abukuma granite region.* Papers Inst. Phys. Chem. Res. Tokyo, 1939, vol. 36, pp. 112–1 2 figs.

Detailed chemical analyses are given of allanite (sp. gr. 3·70–3·90) f ten new localities for this mineral in the Abukuma range, Fukush

fecture. They agree with Machatschki's formula [M.A. **4**–357]. The sence of MnO (0·60–4·87 %) is a characteristic feature of the allanites this region; and hardness (5½–6) increases with the amount nganese. Refractive index (β 1·743–1·770) increases with the amount rare-earths and iron, Fe''' having twice the effect of Fe''. Colour of streak ranges from dark green to brown, depending on the ratio O_3:FeO (brown when >0·35). The mineral was obtained from felspar quartz quarries, generally as good prismatic crystals, up to 15 cm. g and 8 cm. thick. L. J. S.

ACHE (Charles). *Kroehnkite and natrochalcite from Chile.* Amer. Journ. Sci., 1939, vol. 237, pp. 447–455, 4 figs.

ew material from Chuquicamata gave the following results. For nkite new forms *j* (210), α (0.1.10), β (015), γ (012), δ ($\bar{1}$12), *i* ($\bar{1}$23), 32), ($a:b:c$ = 0·4586:1:0·4357, β = 71° 30′), cleavage (010) perfect, gr. 2·90; optic axial plane (010), $\alpha:c$ = +48°, α 1·544, β 1·578, 601, 2V 78° 42′. X-ray determinations by W. E. Richmond gave 78, *b* 12·58, *c* 5·48 Å., space-group $C_{2h}^5 = P2_1/c$; the unit cell con- ing two molecules $CuSO_4.Na_2SO_4.2H_2O$. For natrochalcite new ns *a* (100), *k* ($\bar{2}$01), *z* ($\bar{7}$12), ($a:b:c$ = 1·4239:1:1·2140, β = 61° 17½′), gr. 3·476. Analysis by F. A. Gonyer gave SO_3 42·42, CuO 42·01, O 7·98, H_2O 7·71 = 100·12. The unit cell, *a* 8·74, *b* 6·15, *c* 6·53 Å., ains two molecules $NaCu_2(SO_4)_2OH.H_2O$; space-group $C_{2h}^3 = C2/m$. L. J. S.

ACHE (Charles) & RICHMOND (W. E.). *Caledonite.* Amer. Min., 1939, vol. 24, pp. 441–445, 1 fig.

rystallographic, optical, and X-ray data are given for caledonite, 76, from Talisman mine, Beaver Creek, Utah. The unit cell contain- 2[$Cu_2Pb_5(SO_4)_3(CO_3)(OH_6)$] has *a* 7·14, *b* 20·06, *c* 6·55 Å.; space- up $D_{2h}^{13} = Pnmm$. The optical orientation and refractive indices are = *c*) 1·818, β (= *a*) 1·866, γ (= *b*) 1·909; biaxial, negative, 2V 85°. new forms observed are (102), (201), (141), and (151) ($a:b:c$ = 55:1:0·3263). F. A. B.

SS (Jewell J.) & SCHALLER (Waldemar T.). *Inesite.* Amer. Min., 1939, vol. 24, pp. 26–39, 2 figs. Corrections and additions. Ibid., pp. 346–347.

small radiating nodule of flesh-coloured laths of inesite said to e from Quinault, Washington, a new locality for the mineral, gave

SiO_2 45·67, MnO 35·10, FeO 0·92, MgO 0·86, CaO 9·33, H_2O+ 6·53, H_2O- 2·13, total 100·54. A consideration of this and former chemical analys leads to the formula $15SiO_2.3CaO.11MnO.10H_2O$. Optical measur ments on material from Quinault and other localities confirm the co stant composition of inesite; α 1·616, β 1·640, γ 1·651; 2V 74°, negativ $r > v$; extinction-angle on *b* (010) 30°, on *a* (100) 13°. F. A. B.

Nelson (Raymond). *Colusite—its occurrence, paragenesis and gene significance.* Amer. Min., 1939, vol. 24, pp. 369–376, 6 figs.

Berman (Harry) & Gonyer (F. A.). *Re-examination of colusite.* Ibi pp. 377–381, 1 fig.

Colusite belongs to the central copper zone of the Butte, Montar ore deposits and has not been found above the 1200-foot level. A n analysis by F. A. Gonyer of bronze-coloured crystals, H. 3–4, sp. 4·50 (calculated 4·434), showing forms *d* (011), *e* (012), *o* (111), a *n* (112), gives Cu 47·99, Fe 1·09, Sn 6·71, V 2·28, Te 1·26, Sb 0·19, As 9·5 S 30·65, total 99·71. Long-exposure X-ray photographs show that t unit-cell edge *a* is 10·60±0·01 Å. One half the unit-cell contents $Cu_{12}(As,Sn,V,Te,Fe)_4S_{16}$, and the mineral has the tetrahedrite structu It is suggested that germanite $Cu_{12}(Ge,Ga,Fe,Zn)_4(S,As)_{16}$ also belon to the tetrahedrite and not to the zinc-blende group. The new physi and chemical data for colusite are not in agreement with data publish by some previous workers [M.A. **5**–388] and "some doubt must be ca on the samples examined". Polished sections of colusite are copper cream in colour and isotropic. Chromic oxide in hydrochloric acid more slowly nitric acid alone stain polished sections brown revealing zoned structure. Colusite preceded enargite, with which it is genera associated, and followed closely upon the quartz-pyrite stage of depo tion. F. A. B.

Webb (Robert W.). *Investigation of a new occurrence of alurgite fr California.* Amer. Min., 1939, vol. 24, pp. 123–129.

Lavender-rose flakes of alurgite form foliation planes in piedmontit quartz-schist boulders from alluvium on the summit of the Cajon Pa San Bernardine Co. Chemical analysis of material, sp. gr. 2·914, γ 1·59 2V at least 30°, gives SiO_2 46·30, TiO_2 0·71, Al_2O_3 28·52, Fe_2O_3 5·3 MnO 0·65, MgO 4·27, CaO 0·14, Na_2O 0·61, K_2O 9·15, F 0·67, H_2O+ 4·08, H_2O- 0·03, less O 0·28, total 100·17. The colour is considered be due to the titania content, and the mica is claimed to be a memb of a series intermediate between muscovite and biotite. F. A. B.